

MAY 4 1925

PROCEEDINGS
of the
American Society
of
Civil Engineers



MAY, 1925

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AMERICAN SOCIETY OF CIVIL ENGINEERS

PROCEEDINGS

VOL. LI

MAY, 1925

No. 5

SOCIETY AFFAIRS

Summer Meeting, Salt Lake City, Utah

Located at the center of a vast summer playground, Salt Lake City, as the scene of the Summer Meeting of the Society, July 8-10, 1925, offers untold attractions to the engineer who can combine a pleasure trip with the professional meeting. Doubtless the nearness of the many and beautiful National Parks and the numerous social functions and excursions arranged will all operate, in conjunction with the instructive technical program, to lure a representative body of members from all parts of the country.

Because of the summer tourist rates that will be in effect on most of the railroads, the transportation expense will be moderate, as shown by the following tabulation of round-trip fares and one-way Pullman rates:

	Round-trip rate.	PULLMAN FARES—ONE WAY.			
		Lower.	Upper.	Drawing- room.	Compartment.
San Francisco, Calif.....	\$58.62	\$9.00	\$7.20	\$31.50	\$25.50
Los Angeles, Calif.....	42.60	9.00	7.20	31.50	25.50
Portland, Ore.....	48.35	10.19	8.10	36.00	28.50
Seattle, Wash.....	53.85	12.00	9.60	42.00	33.75
Chicago, Ill.....	56.50	15.38	12.30	54.00	43.50
New Orleans, La.....	85.15	23.26	18.61	82.50	
Washington, D. C.....	100.95	23.63	18.90	84.00	66.75
Philadelphia, Pa.....	103.64	23.63	18.90	84.00	66.75
Boston, Mass.....	115.90	25.51	20.40	90.00	72.00
New York, N. Y.....	108.82	24.38	19.50	85.50	69.00

Within easy access of Salt Lake City as stated are many scenic parks, including the Yellowstone and the newly opened parks in Southern Utah—Zion National, Bryce Canyon, Cedar Breaks, and the north rim of the Grand Canyon. These parks will offer an excellent vacation opportunity at little additional expense. Anticipating that many will wish to plan their vacations in connection with the meeting, the following schedules are given.

YELLOWSTONE PARK TOURS

The cost of a five-day trip through the Yellowstone, including transportation, meals, and lodging while in the Park, will be as follows: Hotels, \$54.00, or Camps, \$45.00.

Railway tickets from many points to Salt Lake City *via* the Yellowstone, for visits either preceding or following the meeting, may be purchased at no extra cost, but such should not be obtained unless a visit to the Park is actually contemplated, as tickets purchased for Yellowstone and return will not be validated at Salt Lake City.

For those who will hold tickets to Salt Lake City, or points beyond, a visit to the Yellowstone may be made as a side trip, the extra railway fare being \$15.10 the round trip and the Pullman, \$3.75 each way.

TOURS THROUGH PARKS IN SOUTHERN UTAH

Side trips from Salt Lake City to Zion National Park, Bryce Canyon, Cedar Breaks, and the Grand Canyon may be made by automobile from Cedar City.

The railway fares from Salt Lake City to Cedar City, and the cost of the various tours by automobile, including meals and lodging while on the tours, are as follows:

Railroad fare: Salt Lake City to Cedar City and return.....	\$13.75
Pullman: Salt Lake City to Cedar City (each way).....	3.75
Zion National Park: Two-day tour.....	21.25
Bryce Canyon and Cedar Breaks: Two-day tour.....	26.00
Zion National Park, Cedar Breaks, and Bryce Canyon: Four-day tour.....	47.25
Zion National Park, Cedar Breaks, Bryce Canyon and the Grand Canyon: Five-day tour.....	86.75

Salt Lake City, the capitol of the State of Utah, was settled during July, 1847, and has become the manufacturing, financial, and business center of a great area. In the immediate vicinity of the city are many places of interest to the visitor, among which are the great open-cut copper mines at Bingham, Utah, Great Salt Lake, Mount Timpanogas and Timpanogas Cave, not to mention the beautiful mountain canyons accessible by automobile. From the city also, in every direction, are improved highway routes to the Yellowstone and Glacier National Parks, Mount Lassen, Crater Lake, Yosemite, Feather River Canyon, the Royal Gorge, and the newly opened scenic points of Southern Utah—Zion National Park, Bryce Canyon, Cedar Breaks, and Kaibab National Forest. In fact, there is a wealth of opportunities for one's vacation preceding or following the meeting.

The program of the Summer Meeting will be largely devoted to reclamation subjects. On Wednesday, July 8, the meeting opens with a morning and afternoon session devoted to papers on Irrigation Development, Financing Land Settlement, Irrigation and Power Development, etc.

In the evening there will be a Dinner, with Popular Addresses on Lake Bonneville and Southern Utah.

On Thursday, July 9, the Technical Divisions will have meetings, the Irrigation Division having planned an elaborate program devoted largely to the technical side of reclamation, with papers dealing on Adjudication of Water Rights, Duty of Water, Reclamation of Water-Logged and Alkali Lands, Interstate Water Problems, Co-operation between Federal and State Agencies in Irrigation Investigations, etc. Other Divisions that have programs in prospect are the Highway, Structural, City Planning, and Power Divisions.

During the afternoon there will be a trip to the Copper Mine at Bingham, Utah, followed by an evening at the Saltair Bathing Beach Resort.

On Friday, July 10, the meeting will close with a morning excursion about the city. After luncheon, the party will be taken by automobile on a trip to Ogden Canyon and Artesian Park.

MONUMENT TO JOHN F. STEVENS AT MARIAS PASS

An added attraction in connection with the Salt Lake City Meeting is the possible dedication by the Great Northern Railway Company of a monument at Marias Pass, Montana, in honor of John F. Stevens, Hon. M. Am. Soc. C. E., who discovered the pass in December, 1889, when he was on a reconnaissance for location of the Great Northern. If a sufficient number of members are able to attend this dedication, the Company promises to hold the ceremony immediately following the meeting. As the additional cost of the trip to Salt Lake City *via* the Yellowstone and Marias Pass (Glacier National Park) is moderate, about \$12.50, it is hoped that many members will attend this ceremony. All those interested are requested to communicate with the Secretary's Office as soon as possible.

Meeting of the Board of Direction

This is an abstract of the notes of the Secretary and subject to approval by the Board of Direction at its next meeting.

The Board of Direction met on March 16, 1925, at Society Headquarters, the following being in attendance: President Robert Ridgway; Secretary George T. Seabury; and, also, Messrs. Bush, Chevalier, Farnham, Gilman, Holmes, Humphrey, Merriman, Norcross, Raymer, Spofford, and Whitman.

Ballots for membership were canvassed, resulting in the election of 14 members, 65 Associate Members, 4 Affiliates, and 30 Juniors, and the transfer of 6 Juniors to the grade of Associate Member.

Thirty-one Associate Members were transferred to the grade of Member.

Meeting of the Executive Committee

This is an abstract of the notes of the Secretary and subject to approval by the Executive Committee at its next meeting.

The Executive Committee met at Society Headquarters on March 16, 1925, the following being in attendance: President Robert Ridgway; Secretary George T. Seabury; and, also, Messrs. Bush, Chevalier, Humphrey, Loweth, and Treasurer Hovey.

Committee on Districts and Zones:

The President was authorized to appoint the Committee on Districts and Zones for 1925, and subsequently announced the appointment of Messrs. Holmes, Dewell, and A. O. Ridgway.

American Engineering Standards Committee Manhole Frames and Covers:

At the last meeting of the Executive Committee a letter was presented from the American Engineering Standards Committee, inviting the Society to act as joint sponsor with the Telephone Group for the standardization of manhole frames and covers.

After discussion, the following motion was adopted:

"That the Society accept joint sponsorship with the Telephone Group, so far as may be practicable or desirable, for the standardization of design, materials and dimensions of manhole frames and covers, and recommend to the Board a contribution of a sum not exceeding \$200 for the work, which is to be completed within one year; and that the President be authorized to appoint a representative to act for the Society in the matter".

During the discussion it developed that in view of the long established policy of this Society not to adopt, as a Society, specifications of any kind, it would not be possible for the Society to adopt the conclusions which may be reached, further than to permit the publication of those conclusions in *Proceedings*.

The following appointments were reported for the record:

Advisory Committee on Cement of the U. S. Department of Commerce:

Thaddeus Merriman, M. Am. Soc. C. E., has been appointed as the Society's representative on the Advisory Committee on Cement of the U. S. Department of Commerce, which appointment was made in response to an invitation from J. Walter Drake, Assistant Secretary of Commerce.

Advisory Committee on Civil Engineering of the Division of Engineering, National Research Council:

Frank A. Barbour, M. Am. Soc. C. E., has been appointed to fill the vacancy caused by the resignation of Robert A. Cummings, M. Am. Soc. C. E., on the Advisory Committee on Civil Engineering of the Division of Engineering of the National Research Council.

Special Committee to Consider Practices in the Bonding Business as Applied to Engineering Construction Work:

Messrs. H. G. Shirley, J. S. Langthorn, and Frank C. Wight have been appointed as a Special Committee to Consider Practices in the Bonding Business as applied to Engineering Construction Work.

Scientific and Engineering Abbreviations and Symbols:

C. M. Spofford, M. Am. Soc. C. E., has been appointed to represent the Society on the Steering Committee for the initiation of the project of Standardization of Scientific and Engineering Abbreviations and Symbols, in response to invitation from the American Engineering Standards Committee.

Engineering Societies Library:

Walter E. Spear, M. Am. Soc. C. E., has been appointed to fill the vacancy caused by the expiration of the term ending in January, 1925, of C. J. Tilden, M. Am. Soc. C. E., as one of the Society's representatives on the Library Board of Engineering Societies Library.

Special Committee on Cement:

The personnel of the Special Committee of the Society on Cement has been completed, as follows: Messrs. Thaddeus Merriman, *Chairman*, A. N. Talbot, and J. R. Baylis.

National Museum of Engineering and Industry:

Messrs. John R. Freeman and Francis Lee Stuart have been appointed as the Society's representatives on a Joint Committee, composed of similar representatives from the other Founder Societies, to investigate the possibility of the establishment of a National Museum of Engineering and Industry and to report on the advisability of the Founder Societies becoming, in a measure at least, sponsors for the movement.

Society Officers Visit Local Sections

During April the President and Secretary enjoyed numerous visits with Local Sections. Most of these were incidental to the Cincinnati Convention, having been made in a "circuit" which included that annual event. In addition, other visits are in prospect. The Pacific Coast trip will include the Summer Meeting at Salt Lake City on the return. The complete itineraries to date are as follows:

Secretary Seabury:

- April 6, 1925.—Iowa Section at Ames, Iowa
- April 7, 1925.—Nebraska Section at Omaha, Nebr.
- April 10-11, 1925.—Utah Section at Salt Lake City, Utah
- April 13, 1925.—Colorado Section at Denver, Colo.
- April 15, 1925.—Kansas City (Mo.) Section at Kansas City, Mo.
- April 16, 1925.—Kansas Section at Topeka, Kans.
- April 17, 1925.—St. Louis Section at St. Louis, Mo.

President Ridgway and Secretary Seabury:

- April 25, 1925.—Nashville Section at Nashville, Tenn.
- April 26, 1925.—Georgia Section at Atlanta, Ga.
- May 8-9, 1925.—Virginia Section at Virginia Military Institute, Lexington, Va.
- June 1, 1925.—Philadelphia Section at Philadelphia, Pa.

Secretary Seabury:

- June-July, 1925.—Los Angeles, San Diego, San Francisco, and Sacramento, Calif., Portland, Ore., Seattle and Spokane, Wash., Salt Lake City, Utah, etc.

It is hoped that President Ridgway will be able to join Secretary Seabury during the latter part of the Pacific Coast trip.

As to the exact dates of the June and July visits, members will probably be advised by their Local Sections.

John F. Stevens Acclaimed as John Fritz Medalist

The presentation on March 23, 1925, of the John Fritz Gold Medal to John F. Stevens, Hon. M. Am. Soc. C. E., as planner and organizer for the construction of the Panama Canal, and as a railroad builder and administrator, marked, in his own words, the very apex of his professional life. A notable audience gathered in the Engineering Societies Building to do him honor. The Presiding Officer, John R. Freeman, Past-President, Am. Soc. C. E., after recounting the life and accomplishments of John Fritz, read greetings from several foreign diplomats, from General Goethals, from ex-President Taft, and from the Associated Veterans of the Russian Railway Corps. He then introduced Ralph Budd, M. Am. Soc. C. E., President of the Great Northern Railway—one of Mr. Stevens' "old boys"—to tell of the Medalist's engineering accomplishments. Mr. Budd narrated graphically how Mr. Stevens, in his reconnaissances, had followed 36 years after another man of the same family name, though unrelated, Isaac I. Stevens, who had explored this region for a northerly transportation route to the Pacific Coast; how his feats of physical valor and his engineering skill had accompanied and in large measure had been responsible for the westward railroad expansion following the Civil War; how this fitted him for his achievements at Panama where he laid the foundations for the subsequent successful construction.

The Chairman then introduced the Hon. Roland S. Morris, former Ambassador to Japan, as one who was familiar with Mr. Stevens' accomplishments in international diplomacy. Mr. Morris linked the two phases of Mr. Stevens' life in the following terms, "Think of his romantic career; born and brought up in a homestead in Maine; quite literally blasting and bridging his way across this continent; and then at a time in life when most men have retired, sitting amid the tombs of the ancient Manchu dynasty and amid the conflicting storms of two great historic revolutions—Russia and China—and casting his eyes still farther westward across the reaches of Russia to the Ural Mountains." How Mr. Stevens went to Russia in 1917 as head of the American Railway Advisory Commission and the stupendous tasks that confronted him were graphically depicted. His success with the Trans-Siberian railroad systems led, in 1919, to his appointment as President of the Inter-Allied Technical Board. Finally, after the withdrawal of the American troops, he carried the load of operating the great Trans-Siberian System almost single-handed. Quoting again:

"From a small apartment at Harbin he exercised a moral influence during that period of reconstruction in the Far East, the results of which will continue to operate long after our generation has passed away. It is singularly interesting to try and picture the polyglot throng which poured through his office day by day as he counseled with Chinese generals, Manchurian leaders, Japanese diplomats, civilians and bureaucrats, Cossacks, Frenchmen, Englishmen, and Americans of all kinds united only in their faith in one man, who seemed to be the sole disinterested factor in that bewildering situation. It was extraordinary service which he rendered, and we, his friends and co-workers, are proud to join with his professional colleagues in giving to him the supreme recognition of a task faithfully performed."

As Mr. Stevens responded to the presentation of the medal by Mr. Charles F. Rand, it seemed as if his innate modesty was trying to stifle the glowing

gratification that kept forcing itself into his remarks. Referring facetiously to the "charges" in the terms of the award, he continued, "I am convinced you are agreed that if I was not wholly guilty in a certain case which has been referred to here to-night, I was at least seriously implicated. Time is a great adjuster and can always be depended on to render a just verdict or to reverse an unjust verdict. Eighteen years is not long to wait for a vindication as time goes, and to-night I am more than content". As he concluded, the prolonged applause contradicted his surmise that he had been rewarded beyond his deserts.

These three notable addresses have been printed in pamphlet form and may be obtained on application to Alfred D. Flinn, 29 West 39th Street, New York, N. Y.

"Stanton Point" Commemorates Survey of Grand Canyon

The recent action of the U. S. Geographic Board in giving the name of "Stanton Point" to a promontory on the south rim of the Grand Canyon, directly opposite Powells Plateau, is another reminder of the picturesque events surrounding the engineering surveys through the Grand Canyon. The late Robert B. Stanton, M. Am. Soc. C. E., commemorated by the newly named point, was the leader of an expedition during 1889 and 1890 traversing the Colorado River from its junction with the Green River to the Gulf of California. This is said to have been one of the first successful journeys through the Grand Canyon. At this time, Mr. Stanton was Chief Engineer of the Denver, Colorado Canyon and Pacific Railroad Company. It was proposed that Colorado should be united with California by means of a railroad and thus deliver Colorado coal to California; but the discovery of coal and, later, of oil in California ended the commercial desirability of the railroad. To demonstrate the availability of the terrain for a road-bed, he photographed the river throughout its entire length, making a series of more than a thousand negatives, which recently the U. S. Geological Survey has solicited and accepted as part of its collection. (A set of photographs from these negatives was deposited in the Engineering Societies Library.)

Powells Plateau is named for another early and venturesome traveler, the late Maj. J. W. Powell, who went through the canyons in 1869. This Plateau is in Coconino County, Arizona, about 20 miles northwest of the Town of Grand Canyon. At various times, William H. Bush and C. H. Birdseye, Members, Am. Soc. C. E., have also done active work along similar lines in this difficult locality.* The surveys of the Grand Canyon form a chapter in romantic explorations hardly equalled in the United States, or, for that matter, in the wilds of uncivilized countries.

A Varied Number of "Proceedings"

This issue of *Proceedings* cannot be criticized for its monotony. Other shortcomings it may have, but at least it is diversified enough to reveal to almost every member something of interest. Mr. Hall's paper dealing with fire-

* *Proceedings*, Am. Soc. C. E., February, 1924, Society Affairs, p. 61.

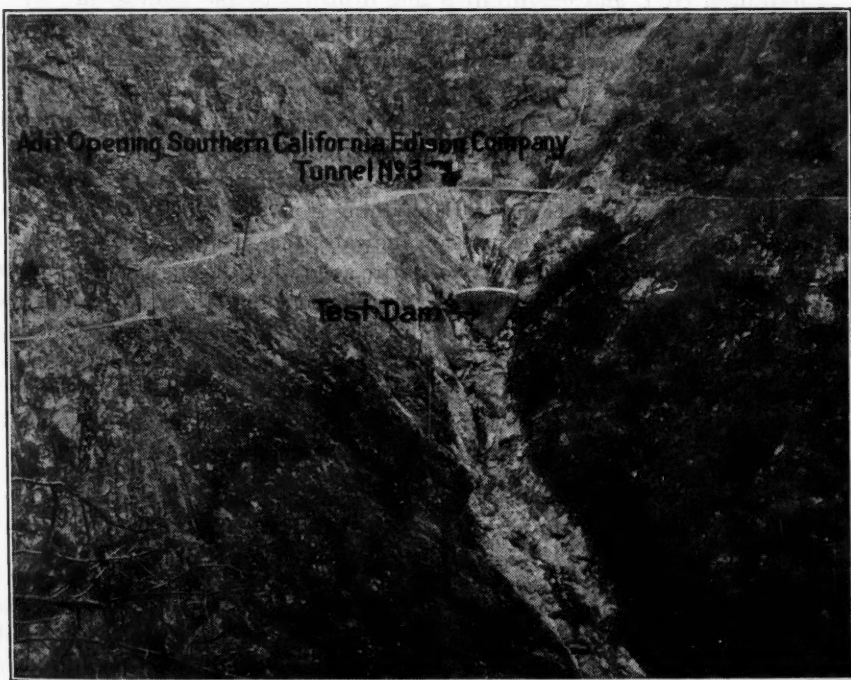
walls for oil storage is said by experts to give a wealth of novel and valuable information; it offers something altogether new about an engineering field almost unknown as far as most members are concerned. Then come the papers by Messrs. Johnson and Hatt presented before the Highway Division in January, 1925, whose subjects have an appeal to all members. Professor Hatt's studies are applicable to much concrete work other than that for highways. The phases of Sanitary Engineering that touch human health transcend the minor professional interests. In obtaining the fascinating paper on atmosphere by Professor C. E. A. Winslow, the Sanitary Engineering Division has made all engineers its debtors. Seldom is the Society privileged to receive such a paper—from an acknowledged scientific authority and yet written with the attractiveness of a popular magazine story. Akin to this same subject, is the matter of odors, so ably treated in its various phases by Messrs. Goldsmith, Gage, Greeley, Skinner, and Weston. This grouping of papers comprising a Symposium as discussed at the January meeting, practically forms an up-to-the-minute text on this important topic. As a suitable end to these unusual contents comes the Soils Committee Report for 1924, with its valuable appendices on colloids, on the influence of bearing area and on piles—a fitting continuation of its notable studies.

This list, unusual in its quality and content, is but another reminder of the Society's office of permitting an engineer to fulfill his obligations to his brethren and to the public. Engineering science is most deeply indebted to the Society for these contributions and the Society in turn acknowledges its dependence on and gratitude to the men who have enabled it to be of such service.

Arch Dam Investigation Goes Forward

To be able to determine the principles of concrete arch dam design by testing to destruction an actual structure 100 ft. high seems too good to be true. Yet this is precisely what is contemplated by the plans of Engineering Foundation's Committee on Arch Dam Investigations, now well matured. Many factors combine to make this unusual experiment possible. As shown on the accompanying photograph the natural conditions at the dam site on Stevenson Creek, a tributary of the San Joaquin River, about 60 miles east of Fresno, Calif., are remarkably favorable. Proximity to the main water supply conduit of the Southern California Edison Company assures an ample water supply under complete control. Moreover, the quantity of water needed and the consequent danger from failure of the dam as it is tested are minimized by the peculiar ruggedness of the site. The dam itself will be of striking dimensions. The abutments are to be excavated to solid rock foundation at about 1 on 1 side slopes rounded at the bottom, thus giving the elevation a general 90° V-shape. At its lowest point the dam is to be 7.5 ft. thick, gradually tapering to 2.08-ft. at the 30-ft. level, above which it retains this thickness. It is purposed to build first to a 60-ft. height and after making complete tests to extend the dam (2 ft. in thickness) 40 ft. farther in 10-ft. lifts to a total elevation of 100 ft. The up-stream radius of curvature of the arch will be uniform, 100 ft.

In size the structure will actually exceed some existing arch dams, so that the results of testing will have immediate practical utility. Further, the local advantages will promote ease and speed of a great variety of observation. Not the least among the conditions favorable to the project are the character of engineering talent in charge of the tests (mostly members of the Society) and the extensive financial support of public utility corporations, construction companies, manufacturers, and engineers. The generous contributions already made assure the construction and testing of the dam, but still further funds are required to expand the project to its complete maturity. The Committee bespeaks the consideration of members who may feel warranted in recommending additional grants.



STEVENSON CREEK TEST DAM OF ENGINEERING FOUNDATION.

Many items of information expected from these tests will be useful in designing and building other concrete structures, particularly other types of dams and arches for other purposes. The Society has published a wealth of excellent papers within the past few years on arches and arch dams. With all the greater eagerness, therefore, will engineers await the outcome of a practical demonstration that will verify, modify, or extend present-day knowledge of this all-important engineering form, the arch dam.

Status of American and Foreign Engineers Compared

Too many American engineers are more interested in their own particular jobs than in the welfare of their profession; and they know too little about

the status of foreign engineers to make valuable comparison with their own. This makes all the more interesting a survey recently conducted by the International Labour Office for the benefit of the Committee on Intellectual Co-Operation of the League of Nations, the results of which have been published in English in a booklet entitled "Engineers and Chemists, Status and Employment in Industry." The results of questionnaires from sixty-four correspondents in twenty-five countries describe the various methods of acquiring the title of engineer or chemist and of safeguarding it, the problems involved in obtaining and retaining employment, the conditions of employment (hours, salaries, vacations, etc.), welfare institutions for engineers (insurance, etc.), and organization and demands of the profession. Such a compilation, from individual sources, must of course represent individual information or viewpoint, nevertheless the reports covering the United States seem to be about as accurate as their brevity would permit. Even so, they provide food for thought as American engineers compare their own advantages (or shortcomings) with those of other countries, mostly European.

An interesting remark covering salaries in the United States is to the effect that "an ordinary engineer may earn anything from \$5 000 to \$25 000" (a year). The characteristic form of expression indicates that it must have been quoted verbatim. Waiving the possibility of satire as to what the engineer may "earn" and not what he actually receives, it would seem that the reporter has been entirely too generous in his estimate of the earning power of American engineers. Certainly by such a criterion many members of the Society—possibly the majority—must class themselves as sub-normal.

Engineers who are further interested may obtain copies of this booklet from the World Peace Foundation, 40 Mt. Vernon Street, Boston, Mass.

The Engineer as a Railroad Executive

With this idea as a thesis, Julius Kruttschnitt, Chairman of the Executive Committee of the Southern Pacific Company, made a convincing presentation of the engineer's utility in railroad management at a meeting in New York, N. Y., on March 18, 1925. Speaking under the joint auspices of the Local Sections of the four Founder Societies and of the New York Electrical Society, Mr. Kruttschnitt, himself an engineer, detailed the accomplishments of engineers in this important field to the satisfaction of a crowd which taxed the capacity of the Engineering Societies Building Auditorium. So valuable was the address considered that the New York Section of the Society has had it printed in pamphlet form for free distribution to its members. Others who wish copies may obtain them at a cost of fifty cents by addressing the Secretary of the Section, Harold M. Lewis, 130 East 22d Street, New York, N. Y. The other speakers at this interesting meeting were Samuel M. Vauclain, M. Am. Soc. C. E., President of the Baldwin Locomotive Works, and Sir Richard Glazebrook, an eminent English aeronautical engineer, Director of the Royal Physical Laboratories.

The Holland Tunnel

Stated Meetings of the
New York State Bridge and Tunnel Commission
and the New Jersey Interstate Bridge and
Tunnel Commission

held Tuesday, November twelfth, nineteen hundred and twenty-four, the following resolution was adopted:

Whereas, the untimely death on October twenty-seventh, nineteen hundred and twenty-four, of

Elifford Milburn Holland

Chief Engineer in the Construction of the Hudson River
Vehicular Tunnel

has caused a general expression of sorrow; and

Whereas, by comment in the public press as well as by resolutions of public bodies and societies and expressions from leading citizens and civic organizations, the opinion is general that Mr. Holland gave his life to the work of the planning and construction of this great public utility; and

Whereas, the members of the New York State Bridge and Tunnel Commission and the New Jersey Interstate Bridge and Tunnel Commission are in accord with the widespread suggestion that some fitting tribute be paid to the memory of the deceased Engineer; Therefore be it

Resolved, that the Hudson River Vehicular Tunnel, now being constructed between Canal and Broome Streets in the Borough of Manhattan, City of New York, and 12th and 14th Streets, Jersey City, New Jersey, be and it is hereby dedicated to the memory of Elifford Milburn Holland, and that the said Hudson River Vehicular Tunnel is hereby designated and named as

The Holland Tunnel

New York State Bridge and Tunnel Commission

New Jersey Interstate Bridge and Tunnel Commission

George R. ...
Chairman
William ...
Secretary

John C. ...
Chairman
John C. ...
Secretary

THE HOLLAND TUNNEL

RESOLUTION

Activities of the New Structural Division

At a meeting of the Executive Committee of the Structural Division, held March 23, 1925, it was decided that the July meeting of the Division to be held in connection with the Salt Lake City meeting of the Society should be of the symposium type. Topics suggested for discussion were: "The Object and Scope of the Structural Division", "Working Stresses in Structural Steel Construction", and "Reinforced Concrete—Unit Stresses and Field Control". Members enrolled in the Division will be given an opportunity to submit written discussion on any or all of these topics to be read at the meeting in case they cannot attend.

Encouraging the Students and Juniors

From the Portland Section comes news of an innovation in dealing with student members, as described in the letter from Albert F. Berni, Assoc. M. Am. Soc. C. E., Secretary of the Section, as follows:

"The Portland Section has undertaken a work which we believe is something new and also something which deserves special mention.

"For several years, we have conducted a prize essay contest among the seniors of the class in civil engineering at the Oregon Agricultural College. The prizes in the contest have heretofore been standard engineering books. These prizes have now been changed in accordance with a move introduced by Mr. George C. Mason. The first three prizes are now initiation fees and one year's dues as Junior Members in the American Society of Civil Engineers. This will introduce at least three members out of each graduating class as well as bring forcibly to the attention of all students the desirability of early affiliating themselves with the Society."

Imitation is conceived to be the sincerest form of flattery. This new idea therefore prompts the query, "What are you doing for your own local Student Members or Juniors"?

Committee Appointments

The following have been chosen to represent the Society:

Standing Committee on Districts and Zones, Glenn D. Holmes, Henry D. Dewell, and Arthur O. Ridgway, Members, Am. Soc. C. E.

Committee to Collect Special Information for the Society for the Promotion of Engineering Education (Board of Investigation and Co-Ordination), Anson Marston and Ira W. McConnell, Members, Am. Soc. C. E., and John R. Freeman, Past-President, Am. Soc. C. E.

Committee on Commercial Arbitration, E. J. Mehren, *Chairman*, John F. Coleman, Arthur H. Markwart, S. M. Swaab, and Leonard C. Wason, Members, Am. Soc. C. E.

Sectional Committee of American Engineering Standards Committee on Standardization of Manhole Frames and Covers, William W. Brush and Robert B. Moore, Members, Am. Soc. C. E.

Engineering Societies Library Receives Notable Italian Hydraulic Works

The Engineering Societies Library has been enriched by a gift of the fourth edition of the "Raccolta d' Autori Italiani che Trattano del Moto dell' Acque" and of the supplementary "Nuova Raccolta * * *".

The seventeen volumes that comprise this series were published in Bologna between 1821 and 1845. They contain, apparently, everything of importance on hydraulic engineering that had been written in Italian at that time. The first volume is a reprint of Domenico Guglielmini's "Della Natura de' Fiumi", the greatest work of its day. Other volumes contain the writings of Galilei, Torricelli, Manfredi, Zanotti, and many other physicists and engineers of note.

For this valuable gift, which has great interest to hydraulic engineers, the Library is deeply indebted to Comm. Ing. Prof. Gaudenio Fantoli, of Milan. For several years, Professor Fantoli has been presenting interesting Italian publications on hydraulic engineering to the Library, of which this is the most notable.

Engineering Volumes for New Speed Scientific School

The Speed Scientific School, an undergraduate school of the University of Louisville, Louisville, Ky., will begin operation in September, 1925, and will offer courses in chemical, civil, electrical, and mechanical engineering. The school will operate on the modified co-operative plan similar to that of the University of Pittsburgh. The Speed Scientific School was made possible through a Foundation created by William Speed, Assoc. M. Am. Soc. C. E., and his sister, Mrs. Frederick M. Sackett, in memory of their father, James Breckenridge Speed, a pioneer business man and manufacturer of Louisville.

The Speed Scientific School will be considerably hampered for the first few years of its existence by the lack of library facilities. It has been suggested that perhaps members of the Society would be interested in this new enterprise to the extent of offering engineering literature that would be of value to the new school. Communications addressed to Dean B. M. Brigman at the University will receive prompt attention.

Stevens Finds Marias Pass

A Feat of Railway Pioneering Through the Rockies

On the night of December 11, 1889, the winds howled through the canyons and defiles of the Rocky Mountains in the Blackfoot Indian country, while on the Continental Divide a lone engineer tramped back and forth through the snow in the darkness fighting for his very life against a temperature 40° below zero. He must live, for he had a momentous message. He had found a way to the Pacific, and knew it to be the best railroad location across the great mountain barrier! John F. Stevens had discovered Marias Pass.

Only those who have suffered can truly sympathize. To appreciate accomplishment in full measure, one must have achieved. Even to comprehend in part one must have had comparable experience or be possessed of a well-trained imagination. Pictures and narratives help to understanding; but one who has always rolled about on wheels in cushioned luxury over rails or well-built highways cannot know the self-reliance, the exertion, the privation, the fatigue, the triumph, the joy of one who on foot made his way through trackless forests, across rugged mountains, in winter's freezing winds, over treacherous snow, alone, as did John F. Stevens and other engineers of his generation.

For city-bred youths of the Twentieth Century who would get some glimmer of appreciation of the deeds of explorer, pioneer, and railroad locating engineer, the Nation has reserved a few areas where samples of experience can be collected in reasonable safety. Notable among these is Glacier National Park, in the northwestern corner of Montana. On the south this remarkable area is limited by tributaries of the Marias River flowing toward the Gulf of Mexico and by the Flathead River and a tributary, Bear Creek, draining toward the Pacific Ocean. The gorges occupied by these mountain streams, joining, gash the Rockies from east to west and form Marias Pass. Its existence was suspected for a generation before it was found by John F. Stevens, then working with James J. Hill, locating the extension of the Great Northern Railway to the Orient; for the Pacific littoral was not the boundary of Mr. Hill's vision westward. Late in 1889, Stevens was chosen to make the reconnaissance across the mountains.

About 1850, the Federal Government was sufficiently impressed with the importance of the country west of the mountains and the westward trend of settlement to undertake explorations to find feasible locations for railroads on a southern, a middle, and a northern route to the Pacific. Isaac I. Stevens (apparently no relation to the family of John F.), was commissioned to explore the northern route. In 1859, he submitted a final report to the Secretary of War on expeditions under his leadership made in 1853, 1854, and 1855.

Isaac Stevens and his associates crossed the Rockies by many passes, some of which had been known since the explorations of Lewis and Clark in 1805. In September, 1853, he got from Little Dog, a prominent chief of the Piegan tribe, "a very particular description of the Marias Pass we were in search of."

It had been much used by the Indians, but some superstition led to its abandonment. His report indicates that he thought this pass would prove to be one of the best in the Rockies.

Then came the Civil War with its blighting interruption of the country's development. When railroad building on a great scale was taken up, routes to the south had preference. Thus, it happened that Marias Pass was not really known by white men until another Stevens came into that country thirty-six years later, having been born in the year that the elder Stevens talked with Chief Little Dog.

John F. Stevens explored the mountains for many miles so thoroughly that he is reported to have said, "I know those mountains well enough to make a model of them." Consequently, when he surmounted the summit of Marias Pass and took its altitude, he knew he had found the best location through the mountains. It was better than the passes 125 miles south, which had been preferred for 80 years. It shortened the projected line of the Great Northern more than 100 miles. Its altitude is but 5 200 ft. above sea level, affording without a summit tunnel a grade of only 1% westbound, and 1.8% eastbound. Its use by the Great Northern Railway put that road "on the map" so far as long-haul, through business was concerned.

So extensive a reconnaissance kept Stevens in the field until long after the advent of winter. So forbidding are the mountains at that season that he could find no one to accompany him on his last expedition except a half-breed Indian who had recently killed a man over in the Kalispel Country and had taken sanctuary with the Blackfeet. This tribe of Indians occupied territory which Stevens would explore. Afoot and carrying packs they set forth. When about five miles from the top of the pass, the Indian gave out. Clearing the 2 ft. of snow from a little patch of ground, Stevens built a fire and left his aide. He pushed on alone, for the days were short. He went far enough through the pass and down on the west side to prove that he was in the Pacific Ocean water-shed and had not been deceived by a side canyon leading by a hidden turn back to the eastern slope. He spent the night alone on the summit, without sleep, tramping to and fro to keep from freezing. When he returned, the fire was out and the Indian almost frozen. Stevens himself had passed through the most trying night of his experience, but a wonderful physique bred in Maine and toughened by many hardships on the plains and among the mountains had survived the fatigue and bitter cold. He took his man to a settlement in the foothills and then made his way to Helena, where the then Chief Engineer was. He submitted a full report of his discovery and stated that in his opinion he had found the best railroad location possible across the Northern Rockies.

Next July, a grateful corporation will place near the spot where Stevens spent that night, at the summit of Marias Pass, an heroic sized bronze statue of the Stevens of that eventful December of 1889.

CONTRIBUTED BY ALFRED D. FLINN, M. AM. SOC. C. E.

Local Sections*

Central Ohio.—March 13, 1925. Dr. J. A. L. Waddell gave an interesting talk on the conditions confronting American engineers in foreign lands. Committees for 1925 were elected. The President of the Section was elected a delegate to the Conference of Local Section Representatives at Cincinnati. Attendance 27.

Dayton.—February 9, 1925. Lieutenant Plank of McCook Field gave an illustrated lecture on "Aerial Mapping".

March 9, 1925. E. D. Smith, Maintenance Engineer of the National Cash Register Company, talked on "Reminiscences of Fifteen Years of Street Railway Work".

Duluth.—January 19, 1925. Mr. J. H. Darling gave a few remarks on the total eclipse of the sun, speaking of the probabilities of the weather being favorable for viewing the eclipse, the path of the shadow, the vantage points in Duluth for making observations, the preparations being made by others in this connection, and interesting phenomena to be noted. Mr. W. H. Hoyt spoke of his proposed visit to the University of North Dakota to address the students on "The Engineering Features of the Head of the Lakes", including the mining and transportation of iron ore. An inspection trip was taken in which many of the members participated under the leadership of Messrs. S. W. Tarr and W. G. Zimmermann through the new St. Luke's Hospital. Attendance 23.

February 16, 1925. The receipt of a published Code of Ethics of the Texas Section was reported by the Secretary and titles of sub-sections were read. A committee was appointed to take the Code under advisement and report to the Section. A letter from Secretary George T. Seabury of the Society relative to the adoption by the Board of Direction of a form of act for legislation for registration of professional engineers was reported. An account of the Fall Meeting of the Society at Detroit, Mich., in October, 1924, was given by Mr. O. H. Dickerson who was followed by Mr. J. R. Stack who spoke of the development of the industrial activities of Duluth, including the effect of institutions of research on the growth of communities, and suggested the desirability of the establishment of a College of Mechanics and Engineering in Duluth, possibly in conjunction with an Agricultural College. Mr. F. Hutchinson spoke of the unwieldy size of the large colleges and advocated the decentralization of the University of Minnesota by the establishment of a college at Duluth. Attendance 25.

March 16, 1925. The report of a Committee on the Establishment of an Agricultural and Engineering College in Duluth was given in part by Mr. S. B. Shepard. A discussion followed which included the whole problem of cost of educating college students. Attendance 16.

New York.—March 18, 1925. The New York Section joined with the Local Sections of the other Founder Societies and the New York Electrical Society in a meeting on "The Engineer as an Executive". Mr. Julius Krutt-

* For list of Local Sections, Officers, Rules, etc., see 1925 Year Book, p. 48.

schnitt, Chairman of the Board of the Southern Pacific Railway System, spoke on "The Engineer as a Railroad Executive", and Samuel M. Vauclain, President of the Baldwin Locomotive Works, presented a paper on "The Engineer in Business". Attendance 880.

Oklahoma.—March 14, 1925. Executive Committee Meeting. Motion was made, seconded, and carried that the Executive Committee be the Local Membership Committee on Qualification. Mr. W. C. Burnham was appointed as Chairman of the Committee to assist the Student Chapter at Norman, Okla., with the authority to appoint his assistants. The Spring Meeting of the Oklahoma Sections of the Founder Societies was discussed and the Secretary instructed to ask the membership for suggestions relative to a Spring Meeting in Tulsa, Okla. Motion was made, seconded, and carried that the dues of the Section be changed from \$2.00 to \$1.00 annually beginning with 1925. Attendance 6.

Philadelphia.—March 2, 1925. A meeting of a Special Committee of the Section was held to discuss the action to be taken in opposing the passage of a bill to repeal the Act of May 25, 1921, to safeguard life, health, and property through the registration of the Profession of Engineers and Land Surveyors in the State. It was the sense of the meeting that it would be better to concentrate on defeating the Repealers rather than proposing any change in the present Act. A resolution was passed appointing a Committee of Five for the purpose of drawing up a resolution of protest and sending a copy of it to each member of the Senate and House of Representatives of the State Legislature.

March 13, 1925. Following the Annual Dinner, an address was given by Secretary George T. Seabury, who spoke on the work of the Society with particular reference to the duties of the Secretary. Daniel E. Moran, Consulting Engineer of New York, N. Y., gave an interesting description of early foundation work in the West. Attendance 78.

Portland, Ore.—January 16, 1925. The State License Law for Engineers was discussed. Mr. S. Murray gave a talk, illustrated with drawings, on the replacing of the sheaves on the railroad bridge, which proved to be a very interesting subject and introduced considerable discussion. Attendance 23.

February 13, 1925. Annual Meeting. After having transacted the business of the Section, the following officers were elected: President, W. G. Brown; First Vice-President, E. C. Willard; Treasurer, Ben S. Morrow; Secretary, A. F. Berni. The meeting was then addressed by Mr. J. A. Currey who gave an interesting description of some of his observations during a recent trip through the Eastern States. Attendance 21.

Sacramento.—March 3, 1925. Assembly Bill No. 234, providing for an increase in salary of the Director of the State Department of Public Works (the State Engineer) was approved. Past-President C. E. Grunsky, who recently made a report to the City of Sacramento on a Proposed Ship Canal from San Francisco Bay to Sacramento, addressed the Section on the subject.

Dr. R. H. Stolz, State Director of Physical Education, spoke on the work his department is trying to accomplish in the public schools. Attendance 39.

March 10, 1925.—Mr. I. N. Ingerson addressed the Section on the recently developed Hoff Current Meter, with which he has done considerable work. Attendance 24.

March 17, 1925. Mr. Edwin D. Hayward addressed the Section on the California-Hawaiian Sugar Refinery at Crockett, and with the aid of diagrams described in detail the flow of sugar through the refinery, from its unloading at the wharf to its emergence as a finished product. Attendance 26.

March 24, 1925. Henry D. Dewell, member of the Board of Direction of the Society from District No. 11, spoke on the Annual Conference of Representatives of Local Sections to be held in Cincinnati, Ohio, in April. Mr. Dewell was selected to act as the representative of this Section. Attendance 27.

March 31, 1925. President J. C. Boyd addressed the meeting on the Engineering Features of the Panama Canal. Attendance 32.

San Francisco.—February 17, 1925. President H. C. Vensano spoke briefly, pledging his best efforts to the work of the Section during his administration. Mr. Harold B. Hammill was elected Secretary-Treasurer for the ensuing term. Because of pending State legislation on registration of Professional Engineers, a postal card vote to determine the sentiment of the Section in relation to the matter was authorized. A resolution was introduced and unanimously carried expressing the appreciation of the Section of the services of Messrs. C. E. Grunsky and Walter L. Huber as President and Director of the Society, respectively. I. C. Steele, Chief of the Division of Civil Engineering of the Pacific Gas and Electric Company, gave the principal talk of the evening on "Engineering Problems in the Construction of the Pit River No. 3 Hydro-Electric Development." Mr. Steele was followed by F. E. Bonner, District Engineer of the U. S. Forest Service, who addressed the Section on "Federal Control over Water Power Development". Ely C. Hutchinson, Vice-President and General Manager of the Pelton Water Wheel Company, spoke on "High Lights of Water Wheel Design, 1925 Model", and "Kinks and Tricks in Construction" was discussed by O. W. Peterson, Construction Engineer of the Pacific Gas and Electric Company. Attendance 115.

Student Chapters*

Massachusetts Institute of Technology.—February 11, 1925. Addresses were made as follows: "The Construction of the Neponset Bridge", by J. Stuart Crandall, Treasurer, The Crandall Company; "The Design of Supports for Superposed Chimneys for Power Houses", by Walter W. Clifford, M. Am. Soc. C. E., of the firm of Clifford and Roebblad, Consulting Engineers; "Structural Design Features of a Hydro-Electric Development", by W. D. Henderson, of Jackson and Moreland, Civil Engineers.

February 13, 1925. A lecture illustrated by slides was given on "Measurement of Flow in Natural Channels with Special Reference to Winter Work in

* For list of Student Chapters, Officers, etc., see 1925 Year Book, p. 54.

New England", by C. H. Pierce, M. Am. Soc. C. E., District Engineer, U. S. Geological Survey, New England District.

February 20, 1925. This was a Joint Meeting of the Chapter with the Harvard Engineering Society, Tufts Civil Engineering Society, Boston Society of Civil Engineers, and the Northeastern Section of the Society. Robert Ridgway, President, Am. Soc. C. E., gave an illustrated talk on the subject of "The Rapid Transit System of New York City."

March 25, 1925. An illustrated lecture on "Town and City Planning" was given by Arthur A. Shurtleff, Landscape Architect.

Ole Mississippi (University of Mississippi).—January 22, 1925. A talk was given by Dr. Kennan on the subject "The Science of Radiography". The Chapter was also addressed by Dr. Kirkpatrick.

February 5, 1925. The program was devoted to a debate on the subject, "*Resolved*, That Small Mileage Permanent Roads Should Be Selected for Lafayette County instead of Large Mileage Soft Surface Roads". Affirmative: Messrs. G. E. Tomlinson and R. N. Bruce; negative: Messrs. C. E. Jones and Earl Oakley.

March 5, 1925. Mr. Shoemaker spoke on "Asphaltic Paving" and was followed by Mr. Mabry, who gave an address on "Wilson Dam".

University of North Dakota. At a recent meeting of the General Engineering Society under the auspices of the Chapter, W. H. Hoyt, M. Am. Soc. C. E., Chief Engineer of the Duluth, Missabe and Northern Railroad, gave an interesting address. Mr. Hoyt illustrated his remarks with numerous slides which portrayed the engineering developments in the region.

Engineering Societies Library

The services of the Engineering Societies Library are available to all members who wish searches, copies, translations, etc., or advice on technical literature. A collection of modern books is also available for loan to members in North America, at moderate rentals. Correspondence should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of work. A more comprehensive statement in regard to this matter will be found on pages 71 and 72 of the Year Book for 1925.

Book Notices*

(March 2 to March 31, 1925)

Der Bau der Starrluftschiffe. By Johannes Schwengler. Berlin, Julius Springer, 1925. 99 pp., diagrams, 10 x 7 in., paper. 4,80 m.

This general discussion of the structural and theoretical problems involved in the design and construction of rigid airships, from the point of view of the structural engineer, is apparently the pioneer work on its subject.

Composition of Technical Papers. By Homer Andrew Watt and Philip B. McDonald. Second Edition. N. Y., McGraw-Hill Book Co., 1925. 429 pp., 8 x 5 in., cloth. \$2.00.

This new edition is a clear, direct statement of the principles of expository writing, illustrated by writings of engineers, and intended to teach students to write better technical papers.

Consolidation of Railroads. By Walter M. W. Splawn. N. Y., Macmillan Co., 1925. 290 pp., 8 x 5 in., cloth. \$2.50.

The author, a member of the Texas Railroad Commission, has given much time to the study of the problems of consolidation and to the consolidations provided by the Transportation Act of 1920. He shows the genesis of the idea of consolidation, tells what Congress expected to accomplish and the extent to which its expectations seem likely to be fulfilled, in the light of the record and arguments submitted to the Interstate Commerce Commission.

Fortschritte der Abwasserreinigung. By Karl Imhoff. Berlin, Carl Heymanns, 1925. 112 pp., illus., maps, 9 x 6 in., boards. 3,60 m. (85 cents).

Dr. Imhoff's small book is a concise summary of the improvements in methods of treating sewage which have occurred since 1914. It is intended for specialists.

Hydromechanik. By M. Samter. Charlottenburg, Robert Kiepert, 1925. 96 pp., 9 x 6 in., paper. 3,20 m.

With the object of making the student conversant with the most important laws of hydrostatics and hydrodynamics without too great an expenditure of time, the author has abbreviated the necessary theoretical demonstrations and used the space thus saved for complete solutions of many examples.

Johnson's Materials of Construction. Rewritten by M. O. Withey and James Aston; edited by F. E. Turneaure. N. Y., John Wiley & Sons, 1925. 865 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$6.00.

This edition of the well-known text and reference book contains new chapters on paints and varnishes and on the constitution of some of the more important non-ferrous alloys. The chapter on the fatigue of metals has been completely revised, and minor revisions have been made throughout.

New Topographic Map of Ohio, Brooke and Hancock Counties. West Virginia. By West Virginia Geological Survey. Morgantown, W. Va., 1924. 75 cents.

* The statements made in these notices are taken from the books themselves, and this Society is not responsible for them. Unless otherwise specified, the books in this list have been donated by publishers.

This map of an important manufacturing area of West Virginia, is printed on one sheet to the scale of 1 mile to the inch. All the roads, streams, towns, villages, schoolhouses, and much other data have been placed on this map.

The Public and Its Utilities. By William G. Raymond. N. Y., John Wiley & Sons, 1925. 346 pp., charts, tab., 9 x 6 in., cloth. \$3.50.

The author endeavors to set forth the respective rights and mutual obligations of utilities and the public, with particular attention to the principles that should govern the establishment of prices, the nature and bases of proper public control and regulation, the fixing of a fair rate of return, and the determination of the fair value of the utility. The book is intended primarily for legislators, municipal officers, and members of the general public.

Railroad Operation. By Ernest Cordeal. (Railwaymen's Handbook Series.) N. Y., Simmons-Boardman Publishing Co., 1924. 255 pp., illus., 7 x 5 in., cloth. \$2.00.

The aim of the author is to inform the young railroad operating man of certain principles of railway management and to show the results which have been attained by their application, and thus to induce him to study his problems intensively and successfully.

Railway Electrification. By H. F. Trewman. Lond. & N. Y., Isaac Pitman & Sons, 1924. 244 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$7.50.

The author presents a number of problems of electrification, with especial reference to their financial aspects and discusses the manufacture and transmission of electricity, its conversion and distribution, railroad motors, energy consumption, suburban and trunk line traffic, etc.

Rights of Trains. By Harry W. Forman. (Railwaymen's Handbook Series.) N. Y., Simmons-Boardman Publishing Co., 1925. 608 pp., illus., charts, 8 x 5 in., cloth. \$3.00.

The author discusses the Standard Code of Rules, paragraph by paragraph. He explains in a clear, direct manner which should appeal to railroad men, the reasons for each rule and shows how it is to be interpreted and applied under various conditions.

Sewerage and Sewage Treatment. By Harold E. Babbitt. Second Edition. N. Y., John Wiley & Sons, 1925. 516 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$5.00.

The lack of a single book dealing with both sewerage and sewage treatment has led to the publication of this volume (now in a revised and enlarged form), based on the courses given by its author at the University of Illinois. It explains the principles involved in the design, construction, and maintenance of sewerage works and the treatment of sewage.

Structural Engineering. By Joseph Husband and William Harby. Third Edition. Lond. & N. Y., Longmans, Green & Co., 1924. 458 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$5.00.

This book occupies an intermediate position between a purely theoretical and a practical discussion of structural design. It treats of beams, columns, struts, plate and lattice girders, roofs, tall buildings, and masonry structures, and is intended for use by draftsmen and students.

Taschenbuch der Stadtentwässerung. By Karl Imhoff. Fourth Edition. München u. Berlin, R. Oldenbourg, 1925. 90 pp., illus., diagrams, tab., 7 x 4 in., cloth. 3,60 m. (85 cents.)

This pocketbook for sanitary engineers contains the numerical data and other information needed in the design of sewer systems and sewage purification plants.

Additions to the Reading Room

Topographic Mapping. By L. B. Roberts, Assoc. M. Am. Soc. C. E., Washington, D. C., The Society of American Military Engineers, 1924. 150 pp., illus., diagrams, maps, 7 x 4 in., cloth. (Gift of the Author.)

This book is designed to cover certain features connected with topographic mapping which cause the greatest difficulty to the map maker. It contains numerous hints and suggestions mingled with clear statements of standard practice recognized as such by the best authorities. The volume should prove valuable to military topographers.

Current Civil Engineering Literature

Key to Abbreviated References to Publications Indexed*

Abbreviated References.	Publication.	Place.
Am. C. Inst.....	American Concrete Institute, <i>Proceedings</i> (Y.)	Detroit
A. I. E. E.....	American Institute of Electrical Engineers <i>Journal</i> (M.)	New York
A. R. E. A.....	American Railway Engineering Association, <i>Proceedings</i> (Y.)	Chicago
A. S. T. M.....	American Society for Testing Materials, <i>Proceedings</i> (Y.)	Philadelphia
Am. Soc. C. E.....	American Society of Civil Engineers, <i>Proceedings</i> (M.)	New York
Am. Soc. Mun. Impvts..	American Society for Municipal Improvements, <i>Proceedings</i> (Y.)	New York
Am. W. W. Assoc.....	American Water Works Association, <i>Journal</i> (BI-M.)	Baltimore
Am. Wood Pres. Assoc..	American Wood Preservers Association, <i>Proceedings</i> (Y.)	Chicago
Ann. P. et C.....	Annales des Ponts et Chaussées (BI-M.)	Paris.
Ann. T. P. Belg.....	Annales des Travaux Publics de Belgique (BI-M.)	Brussels
Assoc. Ing. Gand.....	Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand (Q.)	Ghent
Bost. Soc. C. E.....	Boston Society of Civil Engineers, <i>Journal</i> (M.)	Boston
Can. Engr.....	Canadian Engineer (W.)	Toronto
Cornell C. E.....	Cornell Civil Engineer (M.)	Ithaca
Dock & Harbour.....	Dock and Harbour Authority (M.)	London
Eng.....	Engineering (W.)	London
Eng. & Contr.....	Engineering and Contracting (W.)	Chicago
Eng. Inst. Can.....	Engineering Institute of Canada, <i>Journal</i> (M.)	Montreal
Eng. N. R.....	Engineering News-Record (W.)	New York
Engrs. Soc. Pa.....	Engineers' Society of Pennsylvania, <i>Journal</i> (M.)	Harrisburg
Engrs. Soc. W. Pa.....	Engineers' Society of Western Pennsylvania, <i>Journal</i> (M.)	Pittsburgh
Engr.....	Engineer (W.)	London
Engrs. & Eng.....	Engineers and Engineering, Engineers' Club of Philadelphia (M.)	Philadelphia
Gen. Civ.....	Le Génie Civil (W.)	Paris
Gesund. Ing.....	Gesundheits Ingenieur (W.)	Munich
Inst. C. E.....	Institution of Civil Engineers Minutes of Proceedings (Q.)	London
Inst. Mun. & Co. Engrs..	Institution of Municipal and County Engineers, <i>Journal</i> (W.)	London
Int. Ry. Cong. Assoc....	International Railway Congress Association, <i>Bulletin</i> (M.)	Brussels
Land. Arch.....	Landscape Architecture (M.)	Harrisburg
Mech. Eng.....	Mechanical Engineering (M.) <i>Journal of the American Society of Mechanical Engineers</i>	New York
Mil. Engr.....	Military Engineer (M.)	Washington
Min. & Metal.....	Mining and Metallurgy (M.) <i>American Institute of Mining Engineers</i>	New York
Mun. & Co. Eng.....	Municipal and County Engineering (M.)	Indianapolis
N. E. W. W. Assoc.....	New England Water Works Association, <i>Journal</i> (M.)	Boston
N. Y. R. R. Club.....	New York Railroad Club, <i>Proceedings</i> (M.)	Brooklyn
Oest. Ing. Arch. Ver....	Oesterreichischer Ingenieur und Architekten Verein, <i>Zeitschrift</i> (F.)	Vienna
Power.....	Power (W.)	New York
Rev. Gen.....	Revue Générale des Chemins de Fer (M.)	Paris
Ry. Age.....	Railway Age (W.)	New York
Ry. Eng. & Main.....	Railway Engineering and Maintenance (M.)	Chicago
Ry. Rev.....	Railway Review (W.)	Chicago
Schw. Bauz.....	Schweizerische Bauzeitung (W.)	Zurich
Scl. Am.....	Scientific American (M.)	New York
Soc. Ing. Civ. Fr.....	Société des Ingénieurs Civils de France, <i>Mémoires et Comptes Rendus</i> (Q.)	Paris
Ver. deu. Ing.....	Verein deutscher Ingenieure, <i>Zeitschrift</i> (W.)	Berlin
West. Ry. Club.....	Western Railway Club, <i>Proceedings</i> (M.)	Chicago
West. Soc. Engrs.....	Western Society of Engineers, <i>Journal</i> (M.)	Chicago
Zeit. Bau.....	Zeitschrift für Bauwesen (Q.)	Berlin
Z. d. Bauver.....	Zentralblatt der Bauverwaltung (W.)	Berlin

* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

B. Applied Mechanics

b. Hydraulics

2. Physical Hydraulics (Orifices, Pipes, Channels, Waves)

Measurement of Pipe Flow by the Coördinate Method.* F. W. Greve and Maurice J. Zucrow. Am. W. W. Assoc. Mar., '25.

Quelques Types Récents de Siphons Automatiques.* (Some Recent Types of Automatic Siphons.) Ann. T. P. Belg. Feb., '25.

3. Industrial Hydraulics

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Hydro-Electric Plant Has 452 500 Hp. Installed Nominal Capacity.* Power Mar. 3, '25.

The Mangahao Hydro-Electric Scheme.* Engr. Mar. 6, '25.

Roller Gates Make Up the Major Portion of Powerdale Dam.* J. E. Yates. Eng. N. R. Mar. 19, '25.

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c. Pneumatics

3. Industrial Pneumatics

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C. Materials of Construction and General Processes

a. Lime, Cement, Mortar, Concrete, Brick, Bitumen, Timber, Gravel, etc.

Discussion of the "Report of the Joint Committee on Standard Specifications for Concrete and Reinforced Concrete" Submitted to Constituent Organizations, August 14, 1924. Bost. Soc. C. E. Feb., '25.

Some Economic Possibilities With Atlas Lumnite Cement. J. W. Hussey. Mun. & Co. Eng. Feb., '25.

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The Use of Hydrated Lime With Portland Cement.* John W. Ramsey. (From the *Architectural Forum*.) Eng. & Contr. Feb. 25, '25.

Placing Concrete in Water. J. P. McMakin. (From North Carolina Highway Bulletin.) Eng. & Contr. Mar. 4, '25.

b. Metals

Die Sicherheit der Drahtseile.* (The Safety of the Wire Cable.) Robert Hanker. Oest. Ing. Arch. Ver. Feb. 6, '25.

c. Preservation and Use of Materials

Preservative Treatment of Car Lumber.* (Extracts from report Am. Wood Preservers' Assoc.) Ry. Age Mar. 7, '25.

Report of Committee on Wood Preservation. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 11, '25.

La Question de l'Étanchéité du Béton. Son Imperméabilisation au Moyen du "Watproof". (The Impermeability of Concrete. Rendering it Impermeable by the "Watproof" Method.) O. Sifferlen Gen. Civ. Feb. 7, '25.

f. Rock Excavation. Mining. Rock Removal

Abstracts of Institute Papers.* Min. & Metal. Feb., '25; March., '25.

g. Execution of Works. Specifications

1. Of Masonry

Report of the Committee on Masonry.* (Am. Ry. Eng. Assoc.) Ry. Age Mar. 12, '25.

Dosage des Bétons. La Forme de la Fibre Moyenne des Voutes en Maçonnerie. (Proportioning Concrete. The Form of the Clear Line of Pressure in Masonry Arches.) Ann. T. P. Belg. Feb., '25.

2. Of Concrete

Features of Design in 1 000-Foot Outdoor Swimming Pool.* Eng. N. R. Mar. 12, '25.

Dosage en Bétons. La Forme de la Fibre Moyenne des Voutes en Maçonnerie. (Proportioning Concrete. The Form of the Clear Line of Pressure in Masonry Arches.) Ann. T. P. Belg. Feb., '25.

4. Of Metal

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5. Of Reinforced Concrete

Design of Reinforced-Concrete Stone Bins.* J. M. Taggart. Eng. N. R. Feb. 26, '25.
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h. Foundations

Some Notes on Foundations.* Charles R. Gow. Engrs. Soc. West. Pa. Jan., '25.
 Foundations. Daniel E. Moran. Engrs. and Eng. Feb., '25.
 Substructure Construction Methods: Buffalo Filter Plant.* Eng. N. R. Feb. 26, '25.
 Type de Fondation sur Pieux, avec Eperon en Béton, pour Murs Soutenant.* (Type of Foundation on Piles with Concrete Spur, for Retaining Walls.) F. Chaudy. Gen. Civ. Feb. 7, '25.

k. Tunnels and Tunneling-Shield

Placing Concrete Lining in the Hetch Hetchy Tunnels.* W. F. Webb. Eng. N. R. Feb. 26, '25.
 Driving a Small Tunnel Under Air Pressure at Seattle.* Eng. N. R. Mar. 5, '25.
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D. Highways**a. Location**

Safety of Roads—Influence of Vertical Curves on Visibility.* D. T. Lloyd Jones. Inst. Mun. & Co. Engrs. Feb. 10, '25.

c. Construction

Defects in Asphalt Pavement and Their Causes. R. M. Heine. Mun. & Co. Eng. Feb., '25.
 Recent Developments in Concrete Street Pavement Practice. L. S. Trainor. (From paper read before Illinois Soc. Engrs.) Mun. & Co. Eng. Feb., '25.
 Developments in Constructing and Maintaining Cement Concrete Pavements. Leon V. Belknap. (Paper read before Univ. of Michigan.) Mun. & Co. Eng. Feb., '25.
 Progress of Road Construction in Quebec.* J. L. Boulanger Can. Engr. Feb. 17, '25.
 New Ontario Street Subway.* Can. Engr. Feb. 17, '25.
 Construction of Bituminous Roads. F. N. Rutherford. (Paper read before Conference on Road Construction.) Can. Engr. Mar. 3, '25.
 Small Bridges and Culverts. A. Sedgwick. (Paper read before Conference of Road Superintendents.) Can. Engr. Mar. 3, '25.
 Recent Conclusions in Highway Research. A. T. Goldbeck. (From *Public Roads*.) Eng. & Contr. Mar. 4, '25.
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 Study of Impact in Its Relation to Pavement Design.* G. W. Hutchinson. Eng. N. R. Mar. 12, '25.
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d. Maintenance

Gravel Road Maintenance. J. T. Donaghey. (Paper read before Univ. of Michigan.) Mun. & Co. Eng. Feb., '25.
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 State Wide Road Maintenance.* Frank T. Sheets. (From paper read before Am. Road Bldrs. Assoc.) Eng. & Contr. Mar. 4, '25.
 Dust Laying on Surfaced Roads in California. H. S. Comly. Eng. N. R. Mar. 5, '25.
 Ueber die Bestanddauer verschiedener Strassenpflasterungen in Wien.* (On the Durability of Various Street Pavements in Vienna.) W. Volt. Oest. Ing. Arch. Ver. Feb. 6, '25.

h. Vehicles. Automobiles. Traffic

The Neck of the Highway Transportation Bottle. C. C. Williams. (Paper read before Univ. of Illinois.) Mun. & Co. Eng. Feb., '25.
 The Use of Highways by Motor Trucks. J. B. Wait. (Paper read before Iowa Eng. Soc.) Mun. & Co. Eng. Feb., '25.
 Development of Highway Traffic in California.* L. I. Hews. Am. Soc. C. E. Mar., '25.
 Fees from Motor Vehicle Common Carriers. (From report of Comm. on Motor Vehicle Trans., Nat'l Assoc. of R. & Utilities Commissioners.) Eng. & Contr. Mar. 18, '25.
 Zur Verkehrsregelung auf dem Potsdamer Platz in Berlin.* (Traffic Regulation on the Potsdam Square in Berlin.) Eger. Z. d. Bauver. Dec. 31, '25.

E. Bridges, Viaducts, and Arches**a. Timber Bridges and Viaducts**

Report on Wooden Bridges and Trestles. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 13, '25.

b. Iron or Steel Bridges and Viaducts

- Reconstruction of the C. & N. W. Ry. Bridge Over the Missouri River Near Blair, Neb.* O. F. Dalstrom. West. Soc. Engrs. Feb., '25.
 Bridge Reconstruction Work of the Ministry of Transport.* Eng. Serial beginning Feb. 27, '25.
 Michigan Central R. R. Completes Niagara Arch.* Ry. Rev. Mar. 7, '25.
 Planning and Construction of New York Central Lines' New Hudson River Bridge.* H. T. Welty. Eng. N. R. Mar. 19, '25.
 Verschlebung der Brigittabrücke in Wien.* (Moving the Brigitta Bridge in Vienna.) Oest. Ing. Arch. Ver. Feb. 6, '25.

d. Concrete and Reinforced Concrete Bridges and Viaducts

- Design of Symmetrical Concrete Arches.* Discussion. William Cain and Carl B. Andrews. Am. Soc. C. E. Mar., '25.

h. Computations, Tests, etc.

- Moving Loads on Highway Bridges. W. Norman Thomas. Inst. Mun. & Co. Engrs. Serial beginning Feb. 10, '25.
 Secondary Stresses in Bridges.* Discussion Hardy Cross, W. M. Wilson, and Thomson E. Mao. Am. Soc. C. E. Mar., '25.

F. Inland Waters**c. Regulation of Waterways. Volume of Discharge, Freshets, Floods, Soundings**

- Behavior of Débris-Carrying Rivers in Flood.* F. N. Holmquist. Eng. N. R. Feb. 26, '25.
 River Danube Entrance Channel.* Dock & Harbour Mar., '25.
 Erosion Extends Relief Channel Far Beyond Its Bounds.* C. E. Ramser. Eng. N. R. Mar. 5, '25.
 Flood Damages Power Plant in the Rio Cobre Valley, Jamaica.* F. L. Bronstroph. Eng. N. R. Mar. 12, '25.
 Calumet Drainage Ditch Reverses Flow of River.* Ray D. Hammons. Eng. N. R. Mar. 12, '25.
 Der Hochwasserschutz für Wien und das Marchfeld. (Flood Protection for Vienna and the Marchfeld.) Ludwig Brandl. Oest. Ing. Arch. Ver. Feb. 20, '25.

f. Supply, Sources of Water, Drains and Reservoirs

- L'alimentation Mécanique des Bièfs Supérieurs du Versant du Canal du Rhône au Rhine.* (Mechanical Supply for the Upper Levels on the Southern Slope of the Canal from the Rhône to the Rhine.) Chf. Dantin Gen. Civ. Feb. 14, '25.

G. Maritime Works**b. Management and Protection of the Ocean**

- Oil Discharge. (Report of Joint Comm. on Oil Discharge, Chamber of Shipping of United Kingdom & Liverpool Steamship Owners' Assoc.) Dock & Harbour Mar., '25.

c. Vessels and Maritime Navigation, etc.

- Le Paquebot Transatlantique "De Grasse".* (The Trans-Atlantic Steamer "De Grasse".) Ol. Quéant. Gen. Civ. Feb. 7, '25.
 Die neuen Salon-Motorboote "Morcote" und "Paradiso" auf dem Luganersee.* (The "Morcote" and "Paradiso", New Passenger Motor Boats on Lake Lugan.) Adolf J. Ryniker. Schw. Bauz. Jan. 3, '25.
 Anton Flettner's Erfindungen.* (Anton Flettner's Inventions). Eugen Munk. Oest. Ing. Arch. Ver. Jan. 9, '25.
 Das "Rotor" Schiff von Flettner.* (The Flettner "Rotor" Ship.) Schw. Bauz. Feb. 14, '25.

e. Navigation Locks

- Appareils de Manoeuvre des Portes d'Ecluses—Type Canal de Panama. (Apparatus for Operating Lock Gates. Panama Canal Type.) A. Caulier. Ann. T. P. Belg. Feb., '25.

f. Maritime Rivers and Canals. Bank Protection

- Historique des Travaux d'Amélioration Réalisés sur les Passes d'Accès du Port de Bordeaux.* (History of the Improvement Works Accomplished on the Channels Leading to the Port of Bordeaux.) Pierre Lefort. An. P. et C. Nov., '24.

g. Dredges and Dredging. Force Pumps. Refloating and Removing Wrecks. Ice-Breakers

- Die Eisbrecharbeiten auf der Elbe im Winter 1923/1924.* (Ice Breaking on the Elbe during the Winter of 1923-1924.) Radisch. Z. d. Bauver. Jan. 7, '25.

i. Harbors (General Articles)

- Durban: The Commercial Gateway of South Africa.* Dock & Harbour Mar. '25.
 L'évolution et l'Extension du Port de Brest.* (Development and Extension of the Port of Brest.) A. Pawlowski. Gen. Civ. Feb. 21, '25.
 Die neuen Verbesserung im Hafen von Boulogne.* (New Improvements in the Harbor of Boulogne.) Eger. Z. d. Bauver. Jan. 7, '25.

J. Dockyard Machinery and Shipyards

- New Dock Equipment on the Clyde.* Engr. Serial beginning Feb. 27, '25.
 The Lay-out and Equipment of Quayside Transit Sheds.* Christopher E. Baldwin. (From
Proceedings Inst. of Transport.) Dock & Harbour Mar., '25.
 Modern Mechanical Handling Equipment for Port Terminals.* George W. Osgood. (Paper
 read before Pacific Coast Port Auth.) Dock & Harbour Mar., '25.
 New Dock Equipment on the Clyde.* Engr. Mar. 6, '25.
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H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics

a. Railroads

1. General Articles

- Ford Railroad Has Unique Operating Practices.* Ry. Age Feb. 28, '25.
 Rush Work on the Natron Cutoff, Central Pacific Ry.* Eng. N. R. Mar. 5, '25.
 Extension of Temiskaming & Northern Ontario Ry.* Ry. Rev. Mar. 7, '25.

2. Location

- Report on Economics of Railway Location. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 12, '25.

3. Roadbed (Construction Work)

- Fuel Consumption and Grade Revision.* F. A. Russell. Ry. Age Feb. 28, '25.
 Union Pacific Builds 95-Mile Idaho-Nevada Line.* Eng. N. R. Mar. 5, '25.
 Tamping, Dragging and Rolling Consolidates New Fill.* George G. Bryson. Ry. Age
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- Report of Committee on Roadway.* (Am. Ry. Eng. Assoc.) Ry. Age Mar. 11, '25.

- Report of Committee on Ballast. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 12, '25.

4. Track

- On the Question of Level Crossings (Public Roads). H. P. Maas-Geesteranus. Int. Ry.
 Eng. Cong. Feb., '25.

- Tracklaying on Kentucky Line of Illinois Central R. R.* Eng. N. R. Mar. 5, '25.

- Double-Tracking and Relocation on the Santa Fe Ry.* Eng. N. R. Mar. 5, '25.

- B. & O. R. R. Completes Track Elevation at Pittsburgh.* W. M. Ray. Eng. N. R. Mar.
 5, '25.

- Report of Committee on Ties. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 13, '25.

- Report of the Committee on Rail. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 13, '25.

- Report of the Committee on Track. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 13, '25.

- Report on Signs, Fences and Crossings. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 13, '25.

- Experience with 130-lb. Rails on the Bessemer & Lake Erie R. R.* Ry. Rev. Mar. 14, '25.

- Traitement Thermique de Rails par le Procédé de la Compagnie des Forges de Chatillon. Com-
 mentary et Neuves-Maisons. (Heat Treatment of Rails by the Process used by the Com-
 pagnie des Forges de Chatillon, Commentry, and Neuves-Maisons. A. Bidault de Chaumes.
 Gen. Civ. Feb. 7, '25.

5. Signals and Safety Apparatus

- On the Question of Fixed Signals.* Mr. Laigle. Int. Eng. Cong. Assoc. Feb., '25.

- On the Question of the Dispatching or Control System.* J. H. Fellows. Int. Ry. Cong.
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- Northern Pacific Main Lines 76 Per Cent. Signaled.* C. A. Christofferson. Ry. Age Mar.
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- Report on Signals and Interlocking. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 11, '25.

6. Rolling Stock (Locomotives, Cars). Fuel

- Self-Propelled Car Service on Canadian National Railways.* Ry. Rev. Feb. 21, '25.

- Locomotive Feedwater Heating.* L. G. Plant. (Abstract of paper read before Central Ry.
 Club.) Ry. Age Feb. 21, '25.

- Santa Fe Superintendent's All-Steel Business Cars.* Ry. Rev. Feb. 23, '25.

- Treating Railway Water Supplies in Iowa.* C. R. Knowles. Am. W. W. Assoc. Mar., '25.

- Report of the Committee on Water Service. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 11, '25.

- Facilities for Fuel Oil for Locomotives.* (From Comm. report, Am. Ry. Eng. Assoc.) Ry.
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- Unit Containers in Freight Transportation.* Ry. Rev. Mar. 21, '25.

- La Première Locomotive "Krupp" à Turbines.* (The First "Krupp" Turbine Locomotive.)
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- Le Réchauffage de l'Eau d'Alimentation des Chaudières Locomotives sur le Réseau P. L. M.*
 (Reheating Locomotive Boiler Feed Water on the P. L. M. System.) A. Parmentier. Rev.
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- Benzinmotor-Triebwagen der Schweizerischen Bundesbahnen.* (Benzine Rail Motor Car on
 the Swiss Federal Roads.) F. Christen. Schw. Bauz. Feb. 28, '25.

7. Use of Electricity

- On the Question of Reduction of the Cost of Traction: Lubrication of Axleboxes for All
 Rolling Stock.* Henry Fowler. Int. Ry. Cong. Assoc. Feb., '25.

- The Virginian Railway Electrification.* Homer K. Smith. Ry. Rev. Feb. 21, '25.

- St. Paul's Electrification Shows Economies Over Steam.* Ry. Age Feb. 28, '25.

- Economic Advantages of Railway Electrification.* Ry. Rev. Feb. 28, '25.

- Northern Pacific Car is Motorized.* Ry. Age Mar. 7, '25.

- Report of Committee on Electricity. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 12, '25.

- Normalisierung der Apparate beim Bau der elektrischen Lokomotiven der S. B. B.* (Stand-
 ardization of Apparatus in Electric Locomotive Building on the Swiss Federal Railways.)
 Fritz Steiner. Schw. Bauz. Serial beginning Feb. 14, '25.

8. Stations, Engine Houses, Shops, Terminals

- On the Question of Shunting Yards.* W. Simon-Thomas. Int. Ry. Cong. Assoc. Feb., '25.

- On the Question of Locomotive Sheds.* R. E. L. Maunsell. Int. Ry. Cong. Assoc. Feb., '25.

- Monon Builds Two-Level Freighthouse.* Ry. Age Feb. 21, '25.

- Double-Deck Freight Terminal for Monon Line.* Eng. N. R. Feb. 26, '25.

Canadian Pacific Ry. Completes New Station at Three Rivers, Quebec.* Ry. Rev. Feb. 23, '25.
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Report on Shops and Locomotive Terminals. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 11, '25.
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1. Miscellaneous

Report on Economics of Railway Labor. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 13, '25.

b. Special Railroads

2. Aerial Railroads

Elektr. Kleinsellbahn Harrissenbrucht-Fürigen. (The Harissenbrucht-Fürigen Electric Cable Railroad.) H. H. Peter. Schw. Bauz. Jan. 24, '25.

3. Narrow Gauge. Light Railways

Compare Standard and Narrow Gauge for Logging Railroads. M. W. Stark. (From paper read before Appalachian Logging Cong.) Eng. N. R. Mar. 12, '25.

d. Street Railway, Elevated Railways, Subways

1. General Articles

Die Einführung des Autobetriebs im Vorortverkehr der Städtischen Strassenbahnen in Bern.* (The Introduction of Automobile Operation in Suburban Traffic of the City Street Railways in Bern.) Schw. Bauz. Feb. 7, '25.

4. Track

Tramway Track Construction.* A. R. Hills. Inst. Mun. & Co. Engrs. Mar. 10, '25.

5. Rolling Stock

Les Nouvelles Lignes d'Autobus Electriques à Trolley.* (New Trackless Trolley Lines.) P. Calfas. Gen. Civ. Feb. 21, '25.

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f. Aeronautics

1. General Articles

Future Leviathans of the Skies.* Alexander Klemm. Sci. Am. Mar., '25.

Les Cerfs-volants Modernes.* (Modern Kites.) R. Caillol. Gen. Civ. Feb. 7, '25.

3. Aeroplanes

Equipment Used for Aerial Surveying.* Ernest Robinson. Mech. Eng. Mar., '25.

Les Avions de Chasse Métalliques Récents.* (Recent Metal Combat Airplanes.) Ch Dantin. Gen. Civ. Feb. 21, '25.

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I. Municipal Water-Works. Agricultural Engineering

a. General Articles

The New Wheeling, W. Va., Water Works.* J. F. Laboon. Am. W. W. Assoc. Mar., '25.

Water Supply Situation in Indiana.* L. A. Geupel. Am. W. W. Assoc. Mar., '25.

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b. Hydrology. Water Resources

Control of Appropriations of Water in California. Edward Hyatt. Am. W. W. Assoc. Feb., '25.

The Madrid Water Supply. Eng. Feb. 20, '25.

Niederschlag und Abfluss des Weserquellgebietes.* (Precipitation and Run-Off in the Region about the Source of the Weser.) Karl Fischer. Z. d. Bauver. Serial beginning Feb. 18, '25.

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c. Dams and Reservoirs

Der Anschluss des Staudammes an den Talhang.* (Connecting the Dam to the Valley Wall.) Leiner. Z. d. Bauver. Feb. 18, '25.

Pose d'une Conduite d'Eau Potable dans le Lac Léman à Genève.* (Laying a Water Supply Conduit in Lake Lemman at Geneva.) Robt. Miche. Schw. Bauz. Serial beginning Feb. 14, '25.

d. Analysis and Purification of Water

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Characteristic Properties of Zeolites for Water Softening. S. B. Applebaum. Am. W. W. Assoc. Feb., '25.

Fresh Water Algae. I. M. Lewis. Can. Engr. Feb. 24, '25.

Sewage Disposal and Water Purification in the Upper Ohio River Basin. Philip Burgess. Am. W. W. Assoc. Mar., '25.

Water Filtration Plant at Chippawa.* G. G. Reid and D. H. Fleming. Can. Engr. Mar. 10, '25.

Loss of Head in Closely Baffled Mixing Basin.* C. W. Smedberg. Eng. N. R. Mar. 19, '25.

e. Distribution of Water

Water Conservation by Metering.* Engrs. & Eng. Feb., '25.

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Modern Water Works Pumping Units.* F. Johnstone Taylor. Can. Engr. Serial beginning Mar. 3, '25.

Tests of Leakage, Friction and Discharge in Norfolk Supply Main. W. H. Taylor and Norman Z. Ball. Eng. N. R. Mar. 12, '25.

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J. Sewerage. Sewage and Refuse Disposal**a. Sewers and Drains**

Les Egouts d'Eccloo.* (The Sewers of Eccloo.) O. Decavel and Ch. Du Bosch. *Ann. T. P. Belg.* Feb., '25.

b. Sewage Disposal. Purification

Sewage Disposal and Water Purification in the Upper Ohio River Basin. Philip Burgess. *Am. W. W. Assoc.* Mar., '25.

Pollution and Natural Purification in the Ohio River. Russell Suter. *Am. W. W. Assoc.* Mar., '25.

The Activated Sludge Process at Montmesly. M. Bourgeois. *Inst. Mun. & Co. Engrs.* Feb. 10, '25.

Activated-Sludge Experiments on Packing House Wastes.* G. L. Fugate. *Eng. N. R. Mar.* 12, '25.

Concrete Pipe Line and Flume for Factory Waste Water.* *Eng. N. R. Mar.* 19, '25.

Die Versuchsberechnung mit Abwässern in Dresden. (Experimental Sprinkling with Waste Water in Dresden.) Fleck und Heilmann. *Gesund. Ing.* Jan. 3, '25.

Beitrag zur Berechnung von Faulräumen.* (Contribution to the Calculation of Septic Tanks.) H. Blunk. *Gesund. Ing.* Jan. 24, '25.

c. Refuse Disposal

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Abfallverwertung der Städte und Düngemittelbedarf der Volkswirtschaft.* (Utilization of the Waste of Cities and Fertilizer Requirements of Agriculture.) Hermann Kurz. *Gesund. Ing.* Feb. 7, '25.

x. Miscellaneous

Versuche mit Salvinol zur Bekämpfung der Stechmückenbrut. (Experiments with Salvinol for Preventing the Breeding of Mosquitoes—Culex L.) J. Wilhelm and M. Bayer. *Gesund. Ing.* Jan. 31, '25.

K. Heat Engines**a. Steam Engines. Boilers**

Der Einfluss der Warmerspeicher auf die Dampfkessel.* (The Influence of the Heat Accumulator on the Steam Boiler.) H. E. Witz. *Schw. Bauz.* Jan. 10, '25.

b. Steam Turbines

Neuere englische Dampfturbinen.* (Modern English Steam Turbines.) E. A. Kraft. *Ver. deu. Ing.* Serial beginning Jan. 24, '25.

c. Gas and Oil Engines

L'utilisation des Combustibles Liquides dans les Moteurs à Combustion Interne.* (Use of Liquid Fuels in Internal Combustion Engines.) S. S. Golczewski. *Gen. Civ.* Feb. 14, '25.

L. Electricity**b. Distribution and Transmission of Electricity****2. Magneto and Dynamo—Electric Machines**

Das Umspannwerk Wien-Nord.* (The Vienna-North Transformer Station.) Josef Schlögl. *Oest. Ing. Arch. Ver.* Feb. 20, '25.

f. Signals and Communication

Polarized Telegraph Relays.* J. R. Fry and L. A. Gardner. *A. I. E. E. Mar.*, '25.

Voice-Frequency Carrier Telegraph System for Cables.* B. P. Hamilton and Others. *A. I. E. E. Mar.*, '25.

The Marconi Wireless-Beam Reflector on Inchkeith.* N. Wells. *Eng.* Mar. 13, '25.

M. Architecture**a. Educational, Government and Scientific Buildings**

The Exterior Finish, California Palace of the Legion of Honor.* E. F. Halloran. (From *Pacific Coast Architect.*) *Eng. & Contr.* Feb. 25, '25.

b. Business and Commercial Buildings

Double-Deck Footbridge Connects Chicago Office Buildings.* *Eng. N. R. Mar.* 12, '25.

Das Chilehaus in Hamburg.* (The Chile Building in Hamburg.) C. van Blema. *Z. d. Bauver.* Serial beginning Jan. 7, '25.

Das Chilehaus in Hamburg und die Bauordnung.* (The Chile House in Hamburg and the Building Law.) E. Sörgel. *Schw. Bauz.* Feb. 21, '25.

c. Residences, Hotels

Das Minimal-Kleinhaus.* (The "Minimum" Small House.) *Schw. Bauz.* Jan. 3, '25.

Wohnhaus des Architekten M. Haefeli, im Doldertal, Zurich.* (Home of the Architect M. Haefeli in Doldertal, Zurich.) *Schw. Bauz.* Feb. 28, '25.

d. Storage Buildings

Waterless Gasholders Built at Michigan City and Flushing.* Eng. N. R. Mar. 12, '25.

e. Hospitals and Asylums

Der Umbau des Klosters Allerheiligen in Schaffhausen.* (Reconstruction of the Allerheiligen Monastery in Schaffhausen.) Schw. Bauz. Serial beginning Jan. 24, '25.

f. Factories and Mill Buildings

Planning and Building a Large Motor Vehicle Plant.* Edwin M. Chance. Eng. N. R. Feb. 26, '25.

h. Roofs and Domes

Le Calcul des Coupoles et de Réservoirs.* (Calculation of Cupolas and Tanks.) P. Caufourier. Gen. Civ. Feb. 14, '25.

Das Lamellendach nach Stadtbaurat Zollinger, Merseburg.* (The Lamellar Roof, Devised by City Architect Zollinger, of Merseburg.) Wegner. Z. d. Bauver. Feb. 18, '25.

O. Administration. Legislation. Economics. Statistics**b. Economic Questions of a General Character; Valuations, etc.**

The Possibilities of Preferred Numbers in Civil Engineering. Sydney Wilmot. Eng. & Contr. Feb., '25.

How We Organize and Plan Big Building Operations.* L. J. Horowitz. Eng. N. R. Mar. 12, '25.

d. Administrative and Financial Management of Means of Communications**2. Routes and Roads**

How to Keep Costs on Construction Work.* A. L. Hartridge. Eng. N. R. Mar. 19, '25.

5. Railroads and Street Railways

Report on Economics of Railway Operation.* (Am. Ry. Eng. Assoc.) Mar. 12, '25.

Report on Records and Accounts. (Am. Ry. Eng. Assoc.) Ry. Age Mar. 13, '25.

Nouvelle Methode pour la Détermination des Prix de Revient et la Tarification des Transports par Chemins de Fer. (New Method of determining the Net Cost and Rate Fixing for Railroad Transportation.) Mlle. Thérèse Leroy. Gen. Civ. Feb. 7, '25.

g. Engineering Education

Symposium on Engineering Education. Eng. Inst. Can. Mar., '25.

Q. Surveying and Geodesy

Development and Manufacture of Surveying and Other Engineering Instruments. W. L. Fox. Am. W. W. Assoc. Feb., '25.

The Benefits of Quantity Surveying. H. Neville Mason. (Paper read before Assoc. of Can. Bldg. and Constr. Industries.) Can. Engr. Feb. 17, '25.

Equipment Used for Aerial Surveying.* Ernest Robinson. Mech. Eng. Mar., '25.

Der neue Zeiss-Theodolit.* (The New Zeiss Theodolite.) Otto Lacmann. Z. d. Bauver. Jan. 14, '25.

Die Stereophotogrammetrie im Dienste der Wildbach und Lawinen-verbauung.* (Stereophotographs in the Service of the Wildbach and Lawinen Reconstruction Work.) J. Erhart. Oest. Ing. Arch. Ver. Feb. 20, '25.

S. City Planning

A Synopsis of the Advantages of Town Planning and Zoning. Frank E. Buck. (From Journal of Town Planning Inst. of Canada.) Eng. & Contr. Feb. 25, '25.

The Influence of Zoning on the Design of Public Utilities. A Symposium. Discussion: Morris Knowles, Albert P. Allen, E. P. Goodrich, and William T. Lyle. Am. Soc. C. E. Mar., '25.

Factors in the Zoning of Cities: A Symposium Discussion: W. W. Crosby, Arthur S. Tuttle, Charles Wellford Leavitt, and Max Wakeman Weir, W. A. Weidin, Rudolph P. Miller, Leonard S. Smith, Albert P. Allen, and E. P. Goodrich. Am. Soc. C. E. Mar., '25.

Der Ulmer Wettbewerb zur Ausgestaltung des Münsterplatzes.* (The Ulm Contest for Developing the Cathedral Square.) Klaber. Z. d. Bauver. Serial beginning Feb. 4, '25.

Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers as a co-operative Bureau available only to their membership, and maintained by the contributions from the Societies and their individual members who are directly benefited.

Men Available.—Under this heading, brief announcements will be published without charge. These announcements will not be repeated, except on request received after an interval of one month. Names and records will remain in the active files of the Bureau for a period of three months and are renewable on request. Notice for *Proceedings* should be addressed to Employment Service, 33 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

Opportunities.—A Bulletin of engineering positions available is published weekly and is available to members of the Societies concerned at a subscription rate of \$3 per quarter, or \$10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

Voluntary Contributions.—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of \$10 for all positions paying a salary of \$2 000 or less per annum; \$10 plus 1% of all amounts in excess of \$2 000 per annum; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the service.

Replies to Announcements.—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding, and forwarded to the Employment Service at the address given. Replies received by the Bureau after the positions to which they refer have been filled, will not be forwarded.

MEN AVAILABLE

CIVIL ENGINEER, Jun. Am. Soc. C. E.; graduate; age 28; married. Eight years' experience on design and construction of reinforced concrete and steel buildings of all types. At present employed as chief assistant to consulting engineer. Location, New York City or vicinity. Now available. A-625.

PROFESSORSHIP OR ASSOCIATE PROFESSORSHIP in engineering desired for next year by M. Am. Soc. C. E. Cornell University C. E. graduate. Nine years' college and university professorships in engineering; eight years, active practice in civil, hydraulic, and municipal engineering. Salary reasonable. Correspondence invited. B-760.

STRUCTURAL ENGINEER, Jun. Am. Soc. C. E., desires overtime work. Will take a complete job, designing and detailing, at reasonable rates. B-1951.

CONSTRUCTION ENGINEER OR SUPER-INTENDENT, M. Am. Soc. C. E.; age 44; single; graduate. Twenty years' experience, general construction, reinforced and mass concrete structures, stationary or sliding forms, industrial buildings, foundations, railroad construction and valuation. At present available. Location anywhere in United States or Canada. B-4802.

CIVIL ENGINEER; Graduate, R. P. I.; age 27; married. Four years' experience in reinforced concrete, structural steel, design and construction, buildings, foundations, subways, in charge of several operations, and real estate developments. Available at short notice. Salary \$250. Location, New York City or vicinity. B-4938.

SALES ENGINEER, Jun. Am. Soc. C. E.; graduate; age 26; married. Five years' experience in industrial work, building

construction, contracting, inspecting, and instrument work. Desires live, interesting, sales work in the East with reliable firm. Now employed; can leave on reasonable notice. B-5250.

CIVIL ENGINEER, M. Am. Soc. C. E. Twenty years' experience on railroad location, construction, and maintenance; bridge construction; steel and reinforced concrete, foundations, coffer-dams, highways, and general surveys. Chief engineer in charge of large construction works, by contract, and administration in Latin-American countries. Speaks Spanish. Minimum salary, \$5 000. B-7108.

CONSTRUCTION ENGINEER AND SUPERINTENDENT, Assoc. M. Am. Soc. C. E.; graduate C. E.; age 36; married. Four years on design and estimating structural steel and reinforced concrete; four years on construction of dams, power-houses, and mill buildings; six years in responsible charge of construction and maintenance of large oil refineries. Prefers Middle West or West. Connection with contracting firm preferred, but not essential. Available at once. B-7071.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; Graduate 1910, Queens University, Belfast; age 38; married. Fourteen years' experience as chief of party and resident engineer on railroads, bridges, surveys, etc.; neat draftsman; reinforced concrete design (University of Wisconsin). Available on two weeks' notice. Permanent position with future desired. Location anywhere, if living conditions are suitable. B-7307.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; age 29; single; desires connection with future. Three years' experience in design of reinforced concrete structures; one year in general surveying. Available on short notice. B-7608.

UNIVERSITY TEACHER OR RESEARCH MAN, M. Am. Soc. C. E.; A. M. and C. E. degrees; married. Twelve years in structural design and erection; one year, hydro-electric design; one year in research laboratory; ten years' teaching experience. Interested in research and has published.

Desires position university teaching or responsible work in research laboratory. B-7675.

GRADUATE CIVIL ENGINEER, Jun. Am. Soc. C. E.; age 27; single. Two years' experience on heavy mill construction in reinforced concrete; one and one-half years experience on surveys and topographic mapping for hydro-electric and water supply developments. Desires position on hydro-electric work. Location immaterial. Now available. B-9466.

CIVIL ENGINEER AND CONSTRUCTION SUPERINTENDENT, Assoc. M. Am. Soc. C. E.; technical graduate; age 38; married. Seventeen years' experience on pavements, sewers, railroad, highway, bridge, tunnel, subway, canal, industrial plant, pipe lines, dams, power house, water-works construction. Past eight years, engineer and construction superintendent for large public utilities in charge construction plant, installation, power-house, pump-station equipment. Special training in construction accounting. B-9572.

TEACHER CIVIL ENGINEERING OR MECHANICS, Jun. Am. Soc. C. E., Advanced Degrees C. E., and M. S. Five years' professional experience; five years, teacher of civil engineering in mid-Western university, where he is now Associate Professor of C. E., desires teaching, university or engineering school, civil engineering or mechanics. Temporary employment (by leave of absence) or permanent. Location immaterial. B-9622.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; 1922 graduate; experienced on water power surveys and some highway work. Desires permanent position with consulting engineer or construction company. Now employed. Now available. B-9632.

CONSTRUCTION ENGINEER, M. Am. Soc. C. E.; age 40. Eighteen years' experience in irrigation, drainage, and railroad construction in various Western States and in tropics. Has held executive positions in charge of large works for past six years, broad experience with draglines of all types, and has skilled following of operators. Excellent references. Available immediately. B-9670.

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Membership

(From March 4, to April 1, 1925)

Additions

		Date of Membership.
ALGER, Julian Willmot. County Highway Engr., Dickens County, Box 221, Spur, Tex.....	Assoc. M.	Mar. 16, 1925
ALLEN, Harold. Instr., Kansas State Agri. Coll. (Res., 1712 Poyntz Ave.), Manhattan, Kans.....	Assoc. M.	Dec. 15, 1924
AULL, Luther Bachman, Jr. Draftsman, State Highway Comm., Box 536, Greenwood, S. C.....	Jun.	Jan. 19, 1925
BABBITT, Harold Eaton. Associate Prof., Municipal and San. Eng., Univ. of Illinois, 204 Eng. Hall, Univ. of Illinois, Urbana, Ill.....	Jun. Assoc. M.	April 2, 1912 Sept. 12, 1916
BASE, Joseph Francis. Care, School of Citizenship and Public Affairs, Syracuse Univ., Syracuse, N. Y.....	M.	Mar. 16, 1925
BEAL, Herman. City Engr. (Res., 1113 South 33d St.), Omaha, Nebr.....	Assoc. M.	Mar. 16, 1925
BEAUVAIS, Philip Henry. City Mgr. and City Engr., City Hall, Royal Oak, Mich.....	M.	Mar. 16, 1925
BELL, Archibald Huston. Suffolk, Va.....	Assoc. M.	Mar. 16, 1925
BOGERT, Clinton Lathrop. Cons. Engr. (Sanborn & Bogert), 30 Church St., New York, N. Y.....	Assoc. M. Jun. Assoc. M.	Jan. 19, 1925 Sept. 1, 1908 May 28, 1912
BOURNE, Joseph Bilbrough. 735 Irving St., Alhambra, Calif....	M.	Mar. 16, 1925
BOWMAN, James Schenck. Hydr. and Superv. Engr., Fargo Eng. Co., Citizen Patriot Bldg., Jackson, Mich.....	Assoc. M.	Oct. 14, 1919
BRUNING, John Henry. Acting Director of Public Works (Res., 341 Fifty-seventh St.), Newport News, Va.....	M.	Mar. 16, 1925
BUMANN, Cecil Spencer. Secy.-Treas., W. A. Fuller Co., 1917 Railway Exchange Bldg., St. Louis, Mo.....	Assoc. M.	Jan. 19, 1925
BUNN, Paul King. La Crosse, Kans.....	Assoc. M.	Dec. 31, 1913
BURDEN, William Wilson. Mgr., Robert June (Res., 2202 Elm- hurst Ave.), Detroit, Mich.....	M.	Mar. 16, 1925
BURLESON, Carl Edward. County Engr., Pinellas County High- way Dept., Clearwater, Fla.....	Assoc. M.	Mar. 16, 1925
BUTLER, Joe Beaty. Associate Prof., Dept. of Civ. Eng., School of Mines and Metallurgy, Univ. of Missouri, Box 547, Rolla, Mo.	Jun. Assoc. M.	Aug. 28, 1922 Mar. 16, 1925
CARLTON, Guy William. Chf. Engr. and Vice-Pres., The John W. Cowper Co., Inc., Fidelity Bldg., Buffalo, N. Y.....	M.	Mar. 16, 1925
CHU, Wen-Hu. 397 West Water St., Elmira, N. Y.....	Jun.	Mar. 16, 1925
CLIFFORD, Walter Woodbridge. Cons. Engr. (Clifford & Roe- blad), 101 Tremont St., Boston (Res., 52 Milton Ave., Hyde Park 36), Mass.....	Jun. Assoc. M.	Nov. 8, 1909 Jan. 15, 1917
COLEMAN, Eugene Hunter. (J. F. Coleman Eng. Co.), 814 Hibernia Bldg., New Orleans, La.....	M. Assoc. M.	Oct. 1, 1913 Mar. 13, 1917
CONNELL, Jasper Spence. Chf. Engr., Armstrong, Morrison Co., Ltd., 543 Granville St., Vancouver, B. C., Canada.....	M.	Oct. 21, 1924
CRECELIUS, Walter Reinhardt. Chf. Civ. Engr., Div. of Bridges and Bldgs., City of St. Louis, 301 City Hall, St. Louis, Mo....	Assoc. M.	July 6, 1920
CURREY, Louis Robert, Jr. Designing Engr. (Freeland, Roberts & Co.), 1212 Independent Life Bldg., Nashville, Tenn.....	M.	Mar. 16, 1925
CUTTS, Francis Thacher. Asst. Water Commr., 12 Aberdeen Pl., St. Louis, Mo.....	Jun. Assoc. M.	July 11, 1921 Mar. 16, 1925
DALEY, Edmund Leo. Maj., Corps of Engrs., U. S. A., 1604 Keenan Bldg., Pittsburgh, Pa.....	M.	Mar. 16, 1925
DAVIS, Daniel Elias. (The J. N. Chester Engrs.), 1111 Union Bank Bldg., Pittsburgh, Pa.....	Jun. Assoc. M.	Feb. 28, 1911 Dec. 6, 1915
DELERY, Eugene Frank. Design Engr., Sewerage and Water Board, 602 Sewerage and Water Board Bldg. (Res., 3945 Camp St.), New Orleans, La.....	M.	Mar. 16, 1925
DILLENBECK, Arvin J. Secy. and Treas., Edward P. Lupfer Corpora- tion, 594 Ellicott Sq. (Res., 50 Wellington Rd.), Buffalo, N. Y.	Assoc. M.	May 7, 1913
DONNELLAN, George Patrick. Vice-Pres., A. J. Krebs Co., 409 Walton Bldg., Atlanta, Ga.....	M.	Mar. 16, 1925
EARL, Austin Willmott. Care, Sydney E. Jenkins Co., Ltd., Metro- politan Bldg., Vancouver, B. C., Canada.....	Assoc. M.	Aug. 31, 1915
EVANS, John Marshall. Eng. Dept., Standard Oil Co. of Cali- fornia, 225 Bush St., San Francisco, Calif.....	M.	Mar. 16, 1925
FIFE, Walter Maxwell. Asst. Prof., Civ. Eng., Mass. Inst. of Tech., Cambridge, Mass.....	Assoc. M.	Jan. 19, 1925
FISHER, Martin Rankin. Engr. in Chg., Survey Div., City Engr.'s Office, 107 City Hall, Detroit, Mich.....	Jun.	Mar. 16, 1925
FLETCHER, Boynton Jones. 160 Upham St., Melrose, Mass.....	Assoc. M.	Oct. 21, 1924

MEMBERSHIP—(Continued)

Date of
Membership.

GOODRICH, Charles Francis. Asst. Engr., Chf. Engr.'s Office, Am. Bridge Co., 71 Broadway, New York, N. Y. (Res., 154 Harrison Ave., Westfield, N. J.).....	M.	Mar. 16, 1925
GORMAN, Arthur Ellsworth. Chf. San. Engr., Dept. of Health, City Hall (Res., 6544 North Talman Ave.), Chicago, Ill.....	Assoc. M.	Mar. 16, 1925
HADDEN, Gavin. Civ. Engr., 280 Madison Ave., New York, N. Y.....	Assoc. M.	June 1, 1920
HARNISH, Cornelius Prugh. (Omsted & Gillelen), 1112 Hollingsworth Bldg., Los Angeles (Res., 300 North Almansor St., Alhambra), Calif.....	M.	Mar. 16, 1925
HEARN, Richard Lankaster. Asst. Chf. Engr., Washington Water Power Co., Spokane, Wash.....	Assoc. M.	Mar. 16, 1925
HINES, Frank Matthews. Vista, Calif.....	Assoc. M.	May 12, 1919
HOLLAND, Silvanus Miller. Staff Correspondent, International News Service, San Francisco (Res., 2808 Derby St., Berkeley), Calif.....	M.	Mar. 16, 1925
HOPKINS, Allan Valentine. Draftsman, New South Wales Government Railways and Tramways, 61 Hunter St. (Res., Chelsea Park, New Windsor Rd., Baulkham Hills), Sydney, N. S. W., Australia.....	Jun.	Mar. 16, 1925
HORSTMAYER, Harry Elmer. Bachman House, Hazleton, Pa.....	Jun.	Nov. 25, 1919
HOWLAND, Charles Alpha. Staff Engr., Bureau of Municipal Research, 311 South Juniper St. (Res., 422 West Chelton Ave., Germantown), Philadelphia, Pa.....	Assoc. M.	Dec. 15, 1924
HUDSON, William Douglas. Cons. Engr., Associated with Harland Bartholomew, 408 Compton Bldg., St. Louis, Mo.....	Assoc. M.	Mar. 16, 1925
KEREKES, Frank. Asst. Prof., Civ. Eng., Iowa State Coll., Ames, Iowa.....	M.	Mar. 16, 1925
KEYSER, William Earl. Chf. Designing Engr., Frank Hill Smith, Inc., 14 East 2d St., Dayton, Ohio.....	Jun.	June 6, 1921
LAWS, Joseph Penrose. Box 371, Sioux City, Iowa.....	Assoc. M.	Mar. 16, 1925
LEAHY, Charles Maurice. Pres., Stanhy Constr. Co., 453 Lockwood St., Astoria, N. Y.....	Assoc. M.	Mar. 16, 1925
LOHNINGER, Ferdinand Truesdell. Designing Engr., Chas. Mayer, 56 Manheim St., Elmhurst, N. Y.....	Assoc. M.	Mar. 16, 1925
LYMAN, Richard Forsey. Structural Designer, H. J. Brunner, San Francisco (Res., 5917 Ayala Ave., Oakland), Calif.....	Assoc. M.	Mar. 16, 1925
McCANN, William Ray. Engr., Stone & Webster, Inc., 147 Milk St., Boston, Mass.....	Assoc. M.	May 6, 1914
McCORMICK, Frederick. Castle Creek, via Rannes, Queensland, Australia.....	M.	Mar. 16, 1925
McDONALD, Hayward Cooper. Div. Chf. of Party, Southern California Edison Co., Camp 10, Big Creek, Calif.....	Assoc. M.	May 28, 1923
McIVER, Angus Vaughn. Archt. (Melver & Cohagen), Box 1305, Billings, Mont.....	Assoc. M.	Mar. 16, 1925
McNAMEE, Robert Lettis. Prin. Asst. Engr., Hoad, Decker, Shoecraft & Drury, 303 South State St. (Res., 1052 Olivia Ave.), Ann Arbor, Mich.....	Assoc. M.	Mar. 16, 1925
MEANS, Boyd Irwin. 156 West 76th St., Los Angeles, Calif.....	Assoc. M.	Mar. 16, 1925
MELIORANSKY, Konstantin Paul. Cons. Engr. (Res., 55 West 109th St.), New York, N. Y.....	Assoc. M.	Mar. 16, 1925
MONAGHAN, John Ripley. Deputy Chf. Engr., Powers-Kennedy Contr. Corporation, 149 Broadway, New York, N. Y.....	Assoc. M.	April 16, 1918
MUNSON, Spencer Munroe, Jr. 2120 Tenth St., Sacramento, Calif.....	M.	Mar. 16, 1925
NEEDLES, Enoch Ray. Asst. Engr., Harrington, Howard & Ash, 55 Liberty St., Room 801, New York, N. Y.....	Jun.	Mar. 16, 1925
NEFF, Frank Howard. Prof., Civ. Eng., Case School of Applied Science, Cleveland (Res., Richmond Rd., South Euclid), Ohio.....	Assoc. M.	Aug. 28, 1922
NELSON, Harry Lloyd. Student, United States Cast Iron Pipe & Foundry Co., Burlington, N. J.....	M.	Mar. 16, 1925
NICHOLSON, Robert Harvey. 405 1/4 South Columbia Ave., Los Angeles, Calif.....	Jun.	Mar. 16, 1925
NOBLE, John Henry Neldlinger. Draftsman, Bridge Dept., C. R. R. of N. J., Jersey City (Res., 158 Rutledge Ave., East Orange), N. J.....	Assoc. M.	Oct. 15, 1923
OLIVER, William Albert. Instrumentman, City of Beloit (Res., 302 Highland Ave.), Beloit, Wis.....	Jun.	Mar. 16, 1925
PARKER, Edwin Stone. With J. E. Hanlon & Co., 1033 Little Bldg., Boston, Mass.....	Jun.	Mar. 16, 1925
PETERSEN, Thomas. Concrete Engr., Board of Local Impyts. (Res., 2628 North Spaulding Ave.), Chicago, Ill.....	Assoc. M.	Mar. 16, 1925
PINEL, Stanley Iven. Prin. Asst. Engr., Taylor & Woltmann, Unity Bldg. (Res., 1005 North Main St.), Bloomington, Ill.....	M.	Mar. 16, 1925
POSEY, George Addison. Civ. and Cons. Engr.; County Surv., Alameda County, 454 Fifth St., Oakland, Calif.....	Assoc. M.	Mar. 16, 1925
PROCTOR, Carlton Springer. Cons. Engr. (Moran, Maurice & Proctor), 9 East 45th St., New York, N. Y.....	Assoc. M.	Feb. 6, 1912
	M.	Mar. 16, 1925
	Assoc. M.	Mar. 16, 1925

MEMBERSHIP—(Continued)		Date of Membership.
RADER, Lloyd Forrest. 809 Cottage Ave., Columbus, Ind.....	Jun.	Dec. 15, 1924
REDINGER, David Hubbard. Res. Engr., Southern California Edison Co., Big Creek, Calif.....	Assoc. M.	Sept. 9, 1919
REEDER, William Chester. Asst. Chf. Engr., Bureau of Surveys, 412 City Hall (Res., 1312 South 57th St.), Philadelphia, Pa....	M.	Mar. 16, 1925
RHODES, Ralph Farnham. With U. S. Engr. Office, 5 East 55th St., Savannah, Ga.....	M.	Dec. 15, 1924
ROACH, Alden Gallup. Plant Engr., Laclede Steel Co. of St. Louis, Alton, Ill.	Jun.	Dec. 15, 1924
ROBERT, Lawrence Wood, Jr. Pres., Robert & Co., Inc., Bona Allen Bldg., Atlanta, Ga.....	Assoc. M.	Mar. 7, 1921
ROLLINS, Andrew Peach. (Nagle, Witt, Rollins Eng. Co.), 1024 Keystone Bldg., Houston, Tex.....	M.	Mar. 16, 1925
RUEBSAM, Ernest Carl. Cons. Engr. (Ruebsam & Stevens), 208 Union Trust Bldg., Washington, D. C.....	Jun.	May 4, 1909
SAVILLE, Thorndike. Prof., Hydr. and San. Eng., Univ. of North Carolina; Chf. Hydr. Engr., North Carolina Geological and Economic Survey, Box 352, Chapel Hill, N. C.....	Assoc. M.	Aug. 31, 1915
SCANLAN, Francis Xavier. Bldg. Estimator, Northeastern Constr. Co., 101 Park Ave. (Res., 861 Corona Park, North), New York, N. Y.....	M.	Mar. 16, 1925
SCHOEN, Bertalan. Draftsman, New York Edison Co., 130 East 15th St. (Res., 859 Jackson Ave.), New York, N. Y.....	Assoc. M.	Mar. 16, 1925
SEEBACH, George Joseph. 403 Palmer Ave., Bryn Mawr Park, Yonkers, N. Y.....	Jun.	Mar. 16, 1925
SEIFERT, William Paul. Asst. Engr. with Nicholas S. Hill, Jr., 112 East 19th St. (Res., 519 East 85th St.), New York, N. Y....	M.	Mar. 16, 1925
SHEEHAN, William Francis. Res. Engr., George C. Diehl, 5488 Main St., Williamsville, N. Y.....	Assoc. M.	Mar. 16, 1925
SHERLOCK, Robert Henry. Asst. Prof., Civ. Eng., Univ. of Michigan, 1219 Packard St., Ann Arbor, Mich.....	Assoc. M.	Mar. 16, 1925
SHOCKLEY, Clyde Arthur. (Shockey Eng. Co.), 800 Graphic Arts Bldg., Kansas City, Mo.....	Assoc. M.	June 1, 1920
SLOVER, George. Box 654, Saltsburg, Pa.....	M.	Dec. 15, 1924
SOMERS, Eugene. Second Asst. to Constr. Engr., The Atlas Portland Cement Co., Northampton (Res., 545 Howertown Ave., Catasauqua), Pa.....	Assoc. M.	Mar. 16, 1925
STILES, John Chadwick. Insp. on Wilson Dam with Hugh L. Cooper & Co., Wilson Dam, Florence, Ala.....	Assoc. M.	Mar. 16, 1925
STUBBINS, John Russell. Office Engr., Route No. 1, Extension Div., State Highway Dept., 921 Bergen Ave., Jersey City, N. J.	Assoc. M.	Mar. 16, 1925
TEGTMAYER, Louis George. Asst. Engr., Bureau of Eng., City and County of San Francisco, Room 368, City Hall, San Francisco, Calif.....	Assoc. M.	Mar. 16, 1925
TEMPONE, Jeremiah. Steel Foreman, Seamen's Inst. Bldg. (Res., 1518 Snyder Ave.), Philadelphia, Pa.....	Jun.	Mar. 16, 1925
TREAT, Robert Sperry. 40 Broad St., Wethersfield, Conn.....	Jun.	Mar. 16, 1925
VON SCHRENK, Hermann. Cons. Timber Engr., N. Y. C. Lines, Tower Grove and Flad Aves., St. Louis, Mo.....	Affiliate	July 10, 1907
WALLER, Percy. Asst. Engr., State Dept. of Highways (Res., 278 Mulberry St.), Rochester, N. Y.....	M.	Mar. 16, 1925
WEISKOPF, Walter Herbert. Engr., Am. Bridge Co., 30 Church St. (Res., 255 West 98th St.), New York, N. Y.....	Jun.	Mar. 7, 1921
WELSH, William Albert. (Sheldon & Welsh), 1013 Fulton Bldg., Pittsburgh, Pa.	Assoc. M.	Mar. 16, 1925
WILDER, Alvin Dumond. Chf. Engr., The S. E. Junkins Co., Ltd., 605 Metropolitan Bldg., Vancouver, B. C., Canada.....	Jun.	Oct. 6, 1908
WOODELTON, George Osborne. Secy. to First Deputy Police Commr., 2605 Grand Central Terminal, New York (Res., 165 Taylor St., Long Island City), N. Y.....	Assoc. M.	Dec. 6, 1915
	M.	Mar. 16, 1925
	Affiliate	Mar. 16, 1925

Reinstatements

MEMBERS

	Date of Reinstatement.
WORTHINGTON, Charles.....	Mar. 16, 1925

ASSOCIATE MEMBERS

CATE, Daniel Rogers.....	Mar. 16, 1925
DOBBINS, John Leslie.....	Mar. 16, 1925
DODD, Joseph Holmes Lee.....	Mar. 16, 1925

Resignations

MEMBERS

Date of
Resignation.

BEYER, Richard Albert.....	Mar. 16, 1925
BROWN, Walter Henry.....	Mar. 16, 1925
HIROI, Isami.....	Dec. 31, 1924
KENT, Herbert Vaughan.....	Mar. 16, 1925
LEANE, Walter Burditt.....	Dec. 31, 1924
MILLER, Elmer Kaufman.....	Mar. 16, 1925
TUCKER, Manning Perlee.....	Mar. 16, 1925
WELTON, Ashley Jay.....	Mar. 16, 1925

ASSOCIATE MEMBERS

ARDERY, Edward Dahl.....	Mar. 16, 1925
BATES, Clarence Myers.....	Mar. 16, 1925
CLARKE, Alfred Henry.....	Dec. 31, 1924
COFFIN, Theodore DeLong.....	Mar. 16, 1925
HUESTIS, Charles Calvin.....	Mar. 16, 1925
JONES, Edward Horton.....	Dec. 31, 1924
NORDSTROM, Emil August.....	Dec. 31, 1924
STYER, Wilhelm Delp.....	Mar. 16, 1925
WARD, Charles Johnson.....	Mar. 16, 1925

JUNIORS

BOWER, Andrew Thomas.....	Mar. 16, 1925
EBLING, Everett Ernest.....	Mar. 16, 1925
FISHER, Julian Alston.....	Mar. 16, 1925
GOODMAN, Benjamin Seth.....	Mar. 16, 1925
PERKINS, John Macklem.....	Mar. 16, 1925
SAMMETT, Francis Parkman.....	Mar. 16, 1925
UHR, Saul Irving.....	Dec. 31, 1924
VINCENT, Guy Morgan.....	Mar. 16, 1925
WHIPPLE, Leonard Austin.....	Mar. 16, 1925

Deaths

AYDLOTTE, Roswell James. Elected Associate Member, October 2, 1922; died February 23, 1925.
FREEMAN, Milton Harvey. Elected Associate Member, July 1, 1909; Member, September 9, 1919; died March 24, 1925.
HAYFORD, John Fillmore. Elected Associate Member, May 6, 1896; Member, April 2, 1907; died March 10, 1925.
LOOMIS, Horace. Elected Member, November 5, 1879; died March 8, 1925.

Total Membership of the Society, March 31, 1925

Members	4 986
Associate Members.....	5 374

Corporate Members:.....	10 360
Honorary Members.....	13
Juniors	773
Affiliates	158
Fellows	8

Total	11 312
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